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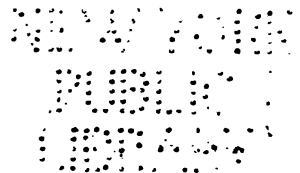
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B L O

BLOIS, an important city of France on the river Loire, in the department of Loir et Cher. It is 96 miles from Paris in a straight line, S.W. by S., or 105 miles by the road through Etampes and Orléans. It is in 47° 35' N. lat., 1° 20' E. long.

Blois is a town of considerable antiquity. An aqueduct cut in the rock, which brings water from a spring at the distance of half a mile to a reservoir close to the walls of the town, is thought to be a Roman work; but no Roman geographer has mentioned any place that can be identified with Blois. Gregory, bishop of Tours, a writer of the sixth century (in his *History of France*), is the first who makes any clear and distinct mention of this town: he calls it Blossa. Under Charles le Chauve, or the Bald (grandson of Charlemagne), who reigned from 840 to 877, it was a place of some consequence; and under the princes of the second, or Carolingian, race, money was coined here. Under these princes Blois with its surrounding territory was erected into a county, and the counts of Blois seem to have acquired considerable power, but their history and succession are confused and uncertain. Stephen, who usurped the throne of England upon the death of Henry I. in 1135, and his brother Henry, bishop of Winchester, were sons of one of the counts of Blois, by Adela, daughter of William the Conqueror; and the house of Blois was more than once united by marriage with the royal family of France. At length the county of Blois, having been sold to Louis, duke of Orléans, brother of Charles VI., came by inheritance to his grandson, Louis; and upon the accession of this prince in 1498 to the throne of France, under the title of Louis XII., his domains, including this county, became attached to the crown. (Expilly, *Dictionnaire des Gaules, &c.*; Millin, *Voyage dans les Départemens du Midi de la France*.) The county of Blois was subsequently made part of the appanage of Gaston, duke of Orléans, brother of Louis XIII., and of Philip, only brother of Louis XIV., from whom it was inherited by the subsequent dukes of Orléans.

After the county was united to the crown, Blois was not unfrequently the residence of the court, and the scene of several important events. Here Louis XII. signed several treaties; and here were celebrated the feasts and tournaments which signalized the marriage of the Duke of Alençon with Margaret, sister of Francis I. Blois was also the scene of festivity in the reign of Henry II., son and successor of Francis; and here Henry IV. married Margaret of Valois, daughter of Henry II. But the most remarkable event of which this city was the scene, was the assassination in the castle of the Duke of Guise and his brother the Cardinal, in the year 1588, during the reign, and by the order, of the king, Henry III. [See Guise.]

The city stands on the north or right bank of the Loire about midway between Orléans and Tours. It is built on the slope of a hill, the summit of which is crowned by the castle: a bridge, erected in 1724, in the place of a more ancient structure, the date of whose foundation was unknown, and which had been carried away by the breaking up of the

B L O

ice after the hard winter of 1709, unites it with the suburb of Vienne on the opposite side of the river. The upper part of the town, which is the most ancient, has steep and narrow streets: more modern edifices occupy the lower part, and accord well with the fine quay that lines the bank of the Loire. According to local tradition, the most ancient building, if indeed it yet remains*, is the prison. The bridge over the Loire is of stone and has eleven arches. The curve formed by the road-way is considerable, and the centre is consequently much raised above the bed of the river: in the middle of the bridge rises a pyramid of about 60 feet high (exaggerated in some geographical works to 100), the effect of which is described as at once striking and agreeable. The castle was originally built by the Counts of Blois, and some part of the structure erected by them (viz., a large tower) still remains. The eastern front, under which is the gateway of the court, was built by Louis XII., whose statue, representing him on horseback, which once adorned this part of the building, has been thrown down. The northern front of the building was erected in the reign of Francis I., and another part towards the west by the celebrated architect Mansard at the order of Gaston, duke of Orléans, brother of Louis XIII., to whom (as already noticed) the county of Blois was given as an appanage. When M. Millin visited Blois (in the early part of the present century) the castle was occupied as a barrack; to what use it is devoted at present we are unable to say. The 'hall of the States' was, at the time of M. Millin's visit, used as a place for exercising recruits in bad weather. A tower in this castle is called 'the tower of Château Renault or Regnard,' because from it that place, which is distant eighteen miles, can be seen. The garden attached to the castle was planted by Henry IV., and improved while in the possession of Gaston of Orléans. Morison, an Englishman (who having followed the disastrous fortunes of Charles I., found an asylum in France), published a catalogue of the plants of this garden, which had acquired considerable celebrity.

Of the other public buildings at Blois, the bishop's palace, which appears to have served for a time as the hotel or office of the prefecture, is one of the handsomest: from its terraced gardens there is one of the most agreeable prospects in France. The present office of the prefecture, built in a large *place*, or open space; the *Hôtel de Ville*, or town house, containing the valuable public library; the nunnery of the Carmelites, now used as a *dépôt des étalons*; and the *Palais de Justice*, or court-house, a building erected at various periods, are among the objects best worthy of notice. The public fountains contribute to the cleanliness of the place and the health of the inhabitants. These fountains are supplied by means of leaden channels or conduits from a reservoir to which the water is brought by the Roman aqueduct already noticed. The public walk,

* We speak doubtfully on this head, for our latest authority for the existence of the prison is the *Voyage dans les Départemens de la France*, par les Citoyens J. A. La Vallée, &c., 13 tomes, Paris, 1788—1802.

which is very beautiful, stretches along the river. (Malte-Brun.)

Before the Revolution Blois possessed many religious houses; there were two abbeys, one of Benedictines (called the Abbey of St. Laumer), very antient, and celebrated for its school as early as the twelfth century; and one of the order of St. Augustin, called the Abbey of Bourg Moyen; convents for Cordeliers, Capuchins, and Minimes; and nunneries for Carmelites, Nuns of the Visitation, and those called *Véroniques*. There was a Jesuits' college previous to 1764, when that order of ecclesiastics was expelled from France. There was also an hospital for the sick (*Hôtel-Dieu*), attended by the nuns called Hospitalières, an hospital for the poor (or poor-house), and a seminary for the education of the priesthood. The churches at Blois were very much injured by the Protestants in the religious wars of the sixteenth century. The buildings of the Abbey of St. Laumer are now used as an hospital, and those of the Abbey of Bourg Moyen for the college or high school. The church of the Abbey of St. Laumer, now called St. Nicholas, is a remarkable monument of the architecture of a period when the Gallo-Roman style was passing away.

The gates of Blois have an image of the Virgin placed over them all, in commemoration of the deliverance of the townsmen from a dreadful pestilence which ravaged the place in 1631, and from which they were, as they deemed it, miraculously delivered in consequence of a vow which they made to the Virgin. (Expilly, *Dictionnaire des Gaules*, &c.)

On the side of the Loire opposite to Blois is the populous suburb of Vienne. As it is not mentioned separately in the returns of the population for 1832, we presume its population was included in that of Blois, which at that time amounted to 11,002 for the town and 13,138 for the whole commune. The people of this town have the reputation of speaking French with great purity, free from any provincialism; but the justness of the eulogy has been disputed by some, who consider it to have been a mere complimentary inference from the frequent residence of the court here. There are at Blois a *Collège* or high school, which however is not of any great importance or repute, two hospitals, a cabinet of natural history, an agricultural society, a public library (already noticed), and a theatre. (M. Robert, *Dictionnaire Géographique*; Reichard, *Descriptive Road Book of France*.) Near Blois are the schools of Menars, established by the Prince of Chimay, of which an account is given in No. XIII. of the *Journal of Education*, and of which we subjoin the following particulars transmitted to us (1835) from Blois.

Menars is a village five miles N.E. from Blois on the bank of the Loire, containing in the midst of a large park a very fine château, which was for some time the residence of Madame de Pompadour. A new and more powerful interest now attaches to this beautiful residence: Prince Joseph de Chimay, the owner of the 'Château de Menars,' has formed, under the title of the 'Prytaneum,' extensive establishments for instruction, rational in its character, and designed for special purposes,—instruction which corresponds to the varied wants of the different classes of which society is composed. Thus the first division of the Prytaneum, called the 'Institute of Commerce and the Belles Lettres,' embraces on the one hand a complete course of scientific and literary instruction, and on the other a complete commercial education. The second division is the 'School of Arts and Trades.' There are seven workshops in this department; those of the wheelwright, joiner and cabinet-maker, blacksmith, polisher and finisher of hardwares, turner in wood, saddler, and cutler. Theoretical and practical instruction are combined in the School of Arts and Trades. Lastly, the third division, called the 'School of Pioneers' (*Ecole des Pionniers*), a term employed in an enlarged sense, comprehends the trades of tailor, shoemaker, bricklayer (*maçon*), sawyer, gardener, &c. Different localities are assigned to each division of the Prytaneum.

The success of the Prytaneum, which was founded only three years ago, has settled the question of education for special purposes which has so long occupied attention, and which some men of liberal minds have at different times sought to bring to the test of experience, but which has never yet been solved as it now is by the 'Prytaneum de Menars.' This work of civilization and of moral improvement has inscribed in the list of benefactors to their country

the name of Prince Joseph de Chimay, who, with rare perseverance, and at great sacrifices, has so completely devoted himself to the noble labour of improving education, at an age when so many men have scarcely finished their own.

The manufactures of this town consist of serges and other light woollens, leather (which branch of industry has rather declined), cutlery and hardware, glass, gloves, and liquorice. Beside these articles, there are others in which trade is carried on, as timber, drugs, wine, brandy, and vinegar.

Blois is the capital of the department. It has a *tribunal de première instance*, or subordinate court of justice, and a *tribunal de commerce*, or court for the settlement of mercantile disputes. The arrondissement of Blois comprehends 718 square miles, or 459,520 acres, and had, in 1832, a population of 114,307. It was subdivided into ten cantons and 140 communes.

Blois was made the seat of a bishopric in the year 1697, and was, with the exception of the bishoprics of Dijon and St. Claude, the latest of those established up to the Revolution. Under the reduced hierarchy of the present day it maintains its episcopal rank. The diocese comprehends the department of Loir et Cher; the bishop is a suffragan of the Archbishop of Paris. The celebrated M. Grégoire was bishop of Blois, or rather of the department of Loir et Cher under the constitution of Civilé du Clergé, 1791; but as the church has always protested against that act, he is not counted in the succession of bishops.

Among the more eminent natives of Blois may be mentioned the good king Louis XII., under whom, as already noticed, the county of Blois was united to the crown; Father Jean Morin (Morinus), a learned orientalist and biblical scholar; and the Marquis de Favras, who was executed at Paris in the year 1790 upon a charge (whether true or false) of having formed the project of a counter-revolution.

The county of Blois (commonly called in maps *Le Blaisois*, but written by some *Le Blésois*) is bounded on the north by Le Dunois and L'Orléanais, properly so called, on the east and south by Berri, from which it is separated in one part by the Cher, and on the west by Touraine and Le Vendômois. It is divided into two parts by the Loire: the part to the south of that river comprehends part of the district of Sologne, one of the most barren tracts in France. The Loire is the only river of any importance which flows through it; the Beuvron and the Cosson, which fall into that river on the south side, are of minor importance, as also the Cisse, which falls into the Loire on the north bank. The Sauldre, a tributary of the Cher, waters the southern part. The chief towns in the Blésois, beside Blois, already described, were Romorantin, St. Dié, and Mer. Romorantin had, in 1832, 6537 inhabitants, or 6985 for the whole commune; and Mer, 1717 for the town, or 3733 for the whole commune; the others are probably of less importance. The Blésois was reputed one of the finest districts in France, abounding in game, poultry, and fish. It is now included in the department of Loir et Cher. The changes which this county passed through in the middle and later ages have been already noticed in speaking of the town of Blois. This country, in the time of the Romans, formed part of the territory of the Carnutes. (Malte-Brun; Expilly; Millin; *Communication from Blois*.)

BLOMEFIELD, FRANCIS, A.M., F.S.A., rector of Fresfield in Norfolk, and author of a very excellent history of that county, was born at Fresfield on July 23rd, 1705. He was first educated at Diss, and then at Thetford, from whence he was sent to Gonville and Caius College, Cambridge, in 1724. He took his degree of B.A. in 1727, and in the same year was ordained deacon of the church of St. Giles's in the Fields, London; and in the following year was made a licensed preacher by Dr. Tanner, then chancellor of Norwich. In 1729 he was instituted rector of Hargham in Norfolk, on the presentation of Thomas Hare, Esq.; and in September of the same year he was instituted rector of Fresfield, on the presentation of his own father, Henry Blomefield, Gent. He continued to hold both rectories till 1730, when he relinquished Hargham. The above particulars are derived from the genealogical table which he has given of his family in the 'History.' We have found it difficult to get any further information concerning him, as the continuator of his work and the editor of the new edition do not furnish any additional facts. The

publishers of the last edition, in eleven vols. 8vo., commenced in 1805, exerted themselves to procure a likeness of Blomefield, and having ascertained that there was none in existence, had recourse to the rather curious expedient of furnishing a portrait intended for another person, but which was considered a striking likeness of the historian of Norfolk.

Blomefield's death must have taken place in or subsequently to 1751, as his last work, printed in his own house at Norwich, is dated in that year. Mr. Gough intimates that he died in bad circumstances. His great work, which in its completed form constitutes one of the best county histories we possess, was published under the modest title of 'An Essay towards the Topographical History of the County of Norfolk.' It was printed in his own house at Fressfield, and the publication began in numbers in 1739. It was left unfinished at his death, when he had carried it to nearly the end of the third (folio) volume, and the completion was ultimately undertaken by the Rev. C. Parkin, rector of Oxburgh, who had rendered some assistance to Blomefield in the previous portion, and had himself formed considerable collections. This gentleman finished the third volume, and added two more, which are considered inferior to those by Blomefield. However, no part of Mr. Parkin's continuation was published until after his death, when it was issued by the bookseller who had purchased his library, which included that of Blomefield. The second volume was published in 1743, the third, completed by Parkin, not till 1769, and the fifth and final volume appeared in 1775. Blomefield was greatly assisted in his work by the collections which had been formed by Peter Le Neve, norroy king-at-arms, who spent above forty years in amassing at great expense and trouble the greatest collection of facts for the history of Norfolk that was ever formed for any county in the kingdom. He was also greatly aided by Bishop Tanner, who, having been chancellor of the diocese, was acquainted with a vast number of records relative to the county. Parkin also had the benefit of Le Neve's collections, as well as of those which had been formed by Blomefield himself. Blomefield's own last-printed work was the 'Collectanea Cantabrigiensiæ,' a collection relating to Cambridge University, town, and county. Although printed so late, the materials seem to have been collected before he began the 'History of Norfolk,' that is, between the years 1724 and 1734, including the period of his residence at the university.

(*History of Norfolk*, folio and 8vo. editions; Gough's *British Topography*.)

BLONDEL, or BLONDIAUX, a French minstrel of the twelfth century, and the friend of Richard I. of England, whom he accompanied to Palestine. He is also called Blondel de Nesles, from the name of his native town; but Fauchet (*Origine de la Langue et Poésie Française*, Paris, 1581), in his series of French poets anterior to 1300, expresses doubts whether the Blondel de Nesles was identical with Richard's minstrel. Accordingly, he bestows a separate article on each, giving under the head of Blondel de Nesles extracts from some of his songs, written in the Norman French, or 'Langue d'oui;' while under the head of Blondel, Richard's favourite, he relates the story of his wandering through Germany in 1193 in search of his master, who, on his return from Palestine, had been made a prisoner by Leopold duke of Austria, and confined in some unknown fortress. On arriving under the walls of the castle of Löwenstein, Blondel, who, from some intelligence he had obtained, suspected that to be Richard's prison, began singing an air which they had composed together, when to his joy he heard Richard's voice responding and concluding the song. The discovery led to Richard's release. This tale, which Fauchet gives on the authority of some old French chronicle, has furnished the subject of a well-known opera by Gretry. The truth of the story however is doubted. (See Berington's *History of Richard I.*, and the article *Blondel*, in the *Biographie Universelle*.) This last styles Richard's Blondel 'Blondel de Nesles,' considering them as one person, and it states that there are twenty-nine of his songs in MS. in the National or Royal Library, and in the library of the Arsenal at Paris.

BLOOD, the animal fluid contained in the tubes called from their office blood-vessels. As long as it is retained in its proper vessel, and as long as the vessel remains alive, the blood is always found in a fluid state, but essentially it

is a solid substance. It is the most complex substance of the animal body. It is composed of several distinct constituents, each of which is endowed with specific properties, and the combination of the whole is so peculiar that there is nothing perfectly analogous to it.

On first flowing from its vessel the blood is a thick, viscid, and tenacious fluid. In all the more highly-organized animals it is of a red colour; but redness is not an essential property of it. In several tribes of animals which possess true and proper blood, this fluid is not of a red colour, and there is no animal whose blood is red in all the parts of the body. In the transparent cornea of the human eye there is abundance of blood; but the blood contained in the minute vessels of this delicate membrane is not red. The blood of the insect is colourless and transparent; that of the reptile is of a yellowish colour; in the main part of the body of the fish, that is, in the whole of its muscular system, the blood is without colour; hence the whiteness of the general substance of the body of the fish; but in the more important organs, and especially in those which constitute the circle of nutrition, called the organic organs, the blood is of a red colour, as in the heart, the branchiæ or gills, and so on. In the bird the blood is of a deep-red; but it is the deepest of all in the quadruped. In some species of quadrupeds it is deeper than in others; in the hare, for example, it is much deeper than in the rabbit. It is deeper in some varieties of the same species than in others, and more especially in different varieties of the human family. Nay, it is deeper in some individuals of the same race than in others, and even in the same individual it is different at different periods, according to age, to the states of health and of disease, and to different species of disease.

In man and all the higher animals the body contains two kinds of blood, each of which is distinguished by a striking difference of colour. Each kind of blood is contained in its own peculiar set of vessels: the one in the vessel called a vein, hence called venous blood; the other in the vessel called an artery, arterial blood. Venous blood is of a dark or Modena-red colour; arterial blood is of a bright scarlet colour. Venous differs from arterial blood in its most essential properties no less than in its colour: venous blood is incapable of nourishing the body and of stimulating the organs; arterial blood is the proper nutrient and stimulant of the system.

The specific gravity of human blood (water being 1000) may be stated to be about 1050, from which standard it is capable of increasing to 1120, and of sinking to 1026, this being the extreme range of variation hitherto observed. Venous is heavier than arterial blood, the former being commonly estimated at 1052, and the latter at 1049: the difference in weight depends, as will be seen immediately, on the excess in venous blood of carbonaceous matter. The higher the organization of the blood the greater is its specific gravity: hence the specific gravity of the blood of the higher is greater than that of the lower animals, and the change produced in the human blood by disease is generally attended with a diminution of its weight. In one instance on record the specific gravity is stated to have been as low as 1022.

There is a remarkable difference in different classes of animals in the temperature of the blood. In some it is only a degree or two above that of the surrounding medium. Creatures with blood of this low temperature are called cold-blooded, in contradistinction to warm-blooded animals, whose temperature is maintained, under whatever variety of circumstances they may be placed, considerably above that of the surrounding air. The temperature of the blood of the bird is higher than that of any other creature. In the duck it is as high as 107°. In many quadrupeds it is considerably higher than in man: as in the sheep, in which it ranges from 102° to 103°. In man it is 98°. Arterial is warmer by one degree than venous blood.

Disease is capable of effecting a considerable change in the temperature of the blood. In almost every case of fever the temperature of the blood differs from the natural standard. In the cold fit of intermittent fever (ague) it sometimes sinks as low as 94°; in some types of continued fever it rises as high as 102°. In inflammation of moderate severity it exceeds the natural standard by 4°; in intense inflammation it is capable of rising above it as high as 7°.

The chemical properties of the blood are highly curious. When blood is taken from its blood-vessel, and allowed to remain at rest, it soon separates spontaneously into two dis-

tinuous parts, into a solid mass and into a fluid matter, in which the solid mass swims. The solid portion of the blood is termed the *clot*, or the *crassamentum*; the fluid portion is called the *serum*; and the process by which the separation takes place is denominated *coagulation*.

The change in the constitution of the blood by which this separation into a solid and a fluid portion is effected, probably commences the very instant the blood leaves the blood-vessel. In the space of three minutes and a half it is sufficiently advanced to be manifest to the eye; in seven minutes the fluid is separated from the solid portion; while the change progressively advances until, in the space of from twelve to twenty minutes, the separation may be said to be complete.

The nature of this curious process is imperfectly understood. It is a process *sui generis*, there being no other with which we are acquainted perfectly analogous to it. It is really, as will be shown immediately, a process of death; it is the mode in which the blood dies.

A watery vapour, called the *halitus*, begins to arise from the blood the moment coagulation commences, and continues to issue from it until the termination of the process. The *halitus* consists of water containing some animal matter in solution. It possesses a very peculiar odour, and it is this which gives to the slaughter-house its characteristic taint.

The *clot* or *crassamentum*, the solid part of the blood, further separates into two portions, a substance of a yellowish white colour forming the top of the clot, and a red mass always found at the bottom of the clot. When the yellowish substance forming the top of the clot is completely separated from the red mass, it is found to be a solid of considerable consistence, soft, firm, elastic, and tenacious, or gluey. Its distinctive character is derived from the disposition manifested by its component particles to arrange themselves into minute threads or fibres; these threads or fibres are often so disposed as to form a complete network. In its general aspect, as well as in its chemical relations, this substance bears a striking resemblance to pure muscular fibre; that is, to muscular fibre deprived of its enveloping membrane and of its colouring matter.

Several names have been given to this substance, gluten, coagulable lymph, fibre of the blood, and *fibrin*; the latter is the name commonly appropriated to it. Of all the constituents of the blood *fibrin* is by far the most important. Whatever other constituent may be absent, this, in all animals which possess blood, is invariably present. The main part of all the solid structures of the body is composed of it: it forms the basis of muscle, and in the lower animals, in which distinct muscular fibres cannot be traced, it probably performs the function of muscle.

The second constituent of the clot, *the red matter*, being heavier than the fibrin, gradually subsides to the lower surface, where, as has just been stated, it is always found forming the bottom of the clot. The proportion of this red matter to the fibrin differs exceedingly in different classes of animals, and even in the same animal at different times, the difference depending on circumstances mainly connected with the general health and vigour of the system. The greater the energy and activity of the animal, the larger is the proportion of this red matter, and it is also generally large in proportion to the elevation of the animal temperature.

Considerable diversity of opinion prevails respecting the intimate nature of this constituent of the blood. What is certain is, that it is composed of innumerable minute particles which vary in size in different animals. It is universally admitted that these particles, minute as they are, are highly organized; but physiologists are not agreed respecting their structure. By some observers they are supposed to be formed of solid colourless nuclei enclosed in an external envelope of a red colour, to which the colour of the blood is owing. By others they are described as consisting of circular, flattened, and transparent cakes, which when seen singly appear to be nearly or quite colourless, but which assume a reddish tinge when aggregated in considerable masses. According to these physiologists, the edge of these cakes is rounded, and this being their thickest part, there is consequently a slight depression in the middle, on both surfaces. The familiar object which these bodies are conceived most nearly to resemble is a penny-piece, with its thickened margin and slightly concave surface. According to this account, the red particles are wholly des-

titute of an external envelope. Instead of consisting of a solid nucleus, inclosed in a red vesicle, the whole body is solid. The former opinion was that of the older physiologists, arrived at by an examination of the particles of the blood with the microscope, when this instrument was much less perfect than it is at present, and when the use of it was much less accurately understood. Mr. Lister, who has succeeded in effecting a considerable improvement in the microscope, and who, together with his friend Dr. Hodgkin, has examined the red particles of the blood with great care, describes them as flattened solid bodies without any membranous envelope.

All observers are agreed that the size of these particles, as long as they retain unimpaired the form they possess on escaping from the blood-vessel, is perfectly uniform; but their real magnitude is variously estimated: the size of the red particle of the human blood is, according to

Bauer	. . .	$\frac{1}{5000}$	part of an inch.
Wollaston	. . .	$\frac{1}{5000}$	" "
Young	. . .	$\frac{1}{5000}$	" "
Kater	. . .	$\frac{1}{5000}$	" "
Prevost and Dumas	. . .	$\frac{1}{5000}$	" "
Hodgkin and Lister	. . .	$\frac{1}{5000}$	" "

The red particles of the blood have a circular form in all the animals constituting the class mammalia, but in the three other classes of vertebrated animals, the fish, the reptile, and the bird, their figure is elliptical. The elliptical particles are larger than the circular, but proportionally thinner. They are larger in fishes than in any other animals, and the largest of all in the skate. They are far more numerous in the bird than in the reptile and fish, but very much smaller.

In what manner, and even in what part of the system the red particles are formed, we are wholly ignorant. The perfect uniformity of their size and form in the several species of animals, and the undeviating precision with which they assume an elongated figure in oviparous, and a circular figure in viviparous animals, would indicate that the power which forms them, whatever it be, is simple in its nature and very general in its operation.

The red particles of the blood are much greater in magnitude than the colourless particles of the fibrin; hence the fibrinous particles readily enter blood-vessels too minute to admit of the red particles. Both sets of particles, diffused through the body of a living animal in a state of extreme subdivision, appear also to be in a state of extreme self-repulsion. By this self-repulsion the union of the particles is prevented and the blood is maintained in a fluid state. In blood withdrawn from the body of a living animal, the property of self-repulsion, more especially among the fibrinous particles, ceases, and they readily cohere, this cohesion constituting the state of coagulation.

The fluid part of the blood called the *serum* is a transparent fluid, of a light straw-colour tinged with green. The proportion of it to the solid part of the blood, or clot, differs exceedingly in different species of animals and in the same animal at different times, according to different states of the system. There is a strict relation between its relative proportion and the strength and ferocity, or weakness and gentleness of the animal. It is small in proportion to the power and fierceness of the animal, and large in proportion to its weakness and timidity: thus it is small in the carnivorous animals, and large in the hare, sheep, and so on. Its quantity is often very much increased in many diseases, and more especially in fever of the typhoid type, in which malady the solid part of the blood is sometimes so much diminished, that coagulation is incapable of taking place, and the entire mass, instead of separating into a transparent fluid and a firm solid, remains a fluid gore.

Serum has an adhesive consistence and a saline taste. Its characteristic property is that of coagulating by heat and by the application of certain chemical agents. At the temperature of 160° it is converted into a white, opaque, solid substance, exactly resembling the white of egg when hardened by boiling, being in fact perfectly pure albumen. Serum contains a quantity of uncombined alkali, for it converts the vegetable colours to green, and it holds in solution various earthy and neutral salts. According to M. Le Canu, who has made the most recent chemical analysis of serum, 1000 parts contain, of

Water	906'00
Albumen	78'00
Animal matter soluble in water and alcohol	1'69
Albumen combined with soda	2'10
Crystallizable fatty matter	1'20
Oily matter	1'00
Hydrochlorate of soda and potash	6'00
Subcarbonate and phosphate of soda and sulphate of potash	2'10
Phosphate of lime, magnesia, and iron, with subcarbonate of lime and magnesia	'91
Loss	1'00
	1000'00

If a mass of coagulated serum be cut into small pieces and placed in the mouth of a funnel, a thin fluid drains from it, which is called *serosity*, and which constitutes the gravy of meat dressed for the table.

From this account of the constitution of the blood, it is manifest that its chief constituents are of an albuminous nature, that is, it contains albumen in three states of modification, viz., albumen, properly so called, fibrin, and red particles; to these are superadded some oily matters, various minute portions of other animal substances, together with saline particles, all dissolved or rather suspended in a large quantity of water.

According to M. Le Canu the relative proportions of the constituents of human blood to each other, as they exist in most individuals, is as follows, this table being the mean of two analyses:—

One thousand parts of human blood contain,

Of Water	783'37
Fibrin	2'83
Albumen	67'25
Colouring matters	126'31
Fatty matters in various states	5'16
Various undefined animal matters and salts	15'08
	1000'00

The relative proportion of the different constituents of the blood is constantly varying. Thus the quantity of water, according to M. Le Canu, is capable of varying in 1000 parts from 853'135, the maximum, to 778'625, the minimum. In the male, the medium quantity is 791'944, in the female 821'764: the watery proportion also varies with the temperament. In the lymphatic temperament, in the male, it is 830'566; in the female, 803'716; while in the sanguineous it is, in the male, 786'584, and in the female it is 793'007.

The proportion of *albumen* contained in 1000 parts of blood is capable of varying from 78'270, the maximum, to 57'890, the minimum. The quantity of *fibrin* varies from 1'360 to 7'236, the medium of twenty-two experiments being 4'298. It appeared to be the greatest in the young or middle aged of the sanguineous temperament, and in the inflammatory state; and least in the lymphatic constitution, the aged, and those suffering under congestion and hæmorrhage.

The proportion of the *red particles* varies more remarkably than that of any other constituent of the blood. In sound health the maximum was found to be in 1000 parts of blood 148'450, and the minimum 68'349; the medium 108'399. In the male, the medium quantity is 132'150; in the female, 99'169. It varies considerably with the temperament. In the lymphatic temperament, the medium quantity was found to be in the male, 117'667, in the female, 116'300; in the sanguineous temperament in the male, 136'497, in the female, 126'174. According to this statement there are contained in 1000 parts of blood, in a sanguineous temperament, 19'830 more red particles than in the lymphatic temperament. Both spontaneous hæmorrhage and the artificial abstraction of blood from the body diminish the relative proportion of the red particles far beyond that of any of the other constituents of the blood. This is found on examination of the blood in the female after an excessive loss of blood by the catamenial discharge; and on examining portions of blood taken from the same body after certain intervals, it was found that a first bleeding furnished in 1000 parts of blood, 792'897 of water; 70'210 of albumen; 9'163 soluble salts and extraneous matter, and 127'73 of red particles; but a third bleeding a few days afterwards in the same patient, a female, gave 834'053 of water, 71'111 of albumen, 7'329 of soluble salts and extraneous matter, and 87'510 of red particles.

It is established on indubitable evidence, that the blood which maintains the life of all the other parts of the body is itself alive. The phenomena which prove this are highly interesting.

1. It is one of the distinctive properties of living bodies that they are capable of resisting, within a certain range, the ordinary influence of physical agents on inanimate matter. Air, heat, moisture, and other physical agents have not the power of decomposing the organized and living body as they have inert matter. There is a principle in the living body which resists the ordinary physical and chemical changes produced by such agents. An egg, for example, as long as it is fresh is alive, and as long as it remains alive it is capable of self-preservation under circumstances which rapidly decompose it when its vitality is extinguished. During the period of incubation the egg is kept at the heat of 103° for the space of several weeks in succession, without undergoing the slightest degree of putrefaction; if its vitality be destroyed, which may be done instantaneously by passing the electric fluid through it, it becomes putrid at that temperature in a few hours. The egg has the like power of resisting cold, which was proved in a beautiful manner by some experiments of John Hunter, so managed as to show at the same time both the power of the vital principle in resisting the physical agent, and the influence of the physical agent in diminishing the energy of the vital principle. He exposed a living egg to the temperature of 17° and 15° of Fahrenheit; it took half an hour to freeze it. When thawed and again exposed to a temperature as high as 25°, it was frozen in a quarter of an hour. A living egg, together with one that had been already once frozen and again thawed, were put into a freezing mixture at 15°; the dead egg was frozen twenty-five minutes sooner than the fresh. In the one case the undiminished vitality of the fresh egg enabled it to resist the low temperature for a long time; in the other case, in consequence of the diminished or destroyed vitality of the frozen egg, it yielded speedily to the influence of the physical agent. Now precisely analogous results were obtained in similar experiments made on the blood. On ascertaining the degree of cold and the length of time necessary to freeze blood immediately taken from the blood-vessel, it was found that, as in the egg, a much shorter time and a much less degree of cold were required to freeze blood that had previously been frozen and again thawed, than blood recently taken from a living vessel, and for precisely the same reason. In blood recently drawn from the blood-vessel, its vitality being comparatively undiminished, it is able to resist cold longer than blood the vital energy of which is already partly exhausted by exposure to the influence of the physical agent.

This result is analogous to a phenomenon recently observed in the coagulation of the blood, dependent on the same principle, and placing in a striking light the influence of blood-letting in diminishing the vital energy of the blood. It has been stated that coagulation is a process of death, being the mode in which the blood dies. Accordingly it is found that coagulation is slow, that is, that the blood is longer in dying according to the vital energy of the system. When blood is taken from a blood-vessel in disease attended with great debility, as in the typhoid types of fever, it coagulates with extreme rapidity, or is even incapable of coagulating at all; when, on the contrary, it is taken in diseases attended with an exaltation of the vital energy, as in intense inflammation, it is not coagulated in triple or quadruple that space of time. The reason is obvious. But it is remarkable that even during one and the same operation of blood-letting there is a manifest difference in the time in which the blood taken at the beginning, in the middle, and at the end of the operation coagulates. Blood was received from a horse at four times, about a minute and a half intervening between the filling of each cup.

	Mfn.	Sec.
In cup No. 1 coagulation began in	11	10
2	10	5
3	9	55
4	3	10

In like manner three cups were filled with the blood of a sheep at the interval of half a minute:

	Min.	Sec.
In cup No. 1 coagulation began in	2	10
2	1	45
3	0	55

The same result was obtained in blood taken from a human subject. A pound and a half of blood was removed from the arm of a woman labouring under fever, a portion of which received into a teacup on the first effusion remained fluid for the space of seven minutes; a similar quantity taken immediately before tying up the arm was coagulated in three minutes, thirty seconds. These experiments demonstrate that coagulation is rapid or slow as the vital energy of the blood is exhausted or unexhausted, or that in proportion to the degree of life possessed by the blood is the space of time it takes in dying.

2. In the second place the vitality of the blood is demonstrated by another class of phenomena. If a living egg be exposed to a degree of heat equal to the temperature at which the egg is maintained during incubation, certain motions or actions are observed spontaneously to arise in it which terminate in the development of the chick. An analogous process takes place in the blood. If blood be effused from its vessels in the living body, either upon the surfaces of organs or into cavities, it solidifies without losing its vitality. This is not the same process as the coagulation of the blood out of the body; it is a vital process, indispensable to the action, and completely under the control of the vital principle. If blood thus solidified within the body be examined some time after it has changed from the fluid to the solid state, the solid is found to abound with blood-vessels. Some of these vessels can be distinctly traced passing from the surrounding living parts into the mass of solidified blood; with others of these vessels no communication whatever can be traced. Now those vessels, the origin of which cannot be traced external to the solid mass, were supposed by Mr. Hunter to be formed within it. Were this really the case, it is obvious that such a solid would commence an action terminating in its organization; an action perfectly analogous to that by which the incubated egg commences a series of movements which terminate in the development of the chick; an action never observed to take place in any body not endowed with life. This argument however is not really affected by the question as to the extrinsic or intrinsic origin of the blood-vessels. What is certain is, that a clot of blood surrounded by living parts becomes organized; what is certain is, that no dead substance thus surrounded by living parts does become organized; the inference is, that the blood itself is alive. While flowing in its living vessel the blood is always maintained in a state of fluidity, in consequence of the state of repulsion both of its red and of its fibrinous particles: and the maintenance of this fluidity is indispensable to life, for the blood could not circulate, and could not divide so as to permeate through the constantly diminishing tubes of the arteries and the capillary branches of the veins, if it approached the solid state.

Of the changes which the blood undergoes in health and disease (the changes of the blood in the latter case constituting its *PATHOLOGY*) a brief view is exhibited in the following extract from the *Philosophy of Health*:—"Health and life depend on the quantity, quality, and distribution of the blood. The chief source from which the blood itself is derived is the chyle: hence too much or too little food, or too great or too little activity of the organs that digest it, may render the quantity of blood preternaturally abundant or deficient; or, though there be neither excess nor deficiency in the quantity of nourishment formed, parts of the blood which ought to be removed may be retained, or parts which ought to be retained may be removed, and hence the actual quantity in the system may be superabundant or insufficient.

"The relative proportion of every constituent of the blood is capable of varying; and of course in the degree in which the healthy proportion is deranged, the quality of the mass must undergo a corresponding deterioration. The watery portion is sometimes so deficient, that the mass is obviously thickened; while at other times the fluid preponderates so much over the solid constituents, that the blood is thin and watery. The albumen, the quantity of which varies considerably even in health, in disease is sometimes twice as great, and at other times is less than half its natural proportion. In some cases the fibrin preponderates so much, that the coagulum formed by the blood is exceedingly coherent, firm, and dense; in other cases the quantity of fibrin is so small, that the coagulation is imperfect, forming only a soft, loose, and tender coagulum, and in extreme cases the blood remains wholly fluid. When the

vital energy of the system is great, the red particles abound; when it is depressed they are deficient. In the former state they are of a bright red colour; in the latter dusky purple or even black.

"When the depression of the vital energy is extreme, the power of mutual repulsion exerted by the particles would seem to be so far destroyed, as to admit of their adhering to each other partially in certain organs; while in other cases they seem to be actually disorganized, and to have their structures so broken up, that they escape from the current of the circulation as if dissolved in the serum, through the minute vessels intended only for the exhalation of the watery part of the blood. This fearful change is conceived to have an intimate connexion with a diminution of the saline constituents. Out of the body, as has been shown, the red particles change their figure instantaneously, and are rapidly dissolved when in contact with pure water; while they undergo little change of form, if the water hold saline matter in solution. It would seem that one use of the saline constituents of the blood is to preserve entire the figure and constitution of the red particles. It is certain that any change in the proportion of the saline constituents produces a most powerful effect on the condition of the red particles. It is no less certain that changes do take place in the proportion of the saline constituents. In the state of health the taste of the blood is distinctly salt, depending chiefly on the quantity of muriate of soda contained in it. In certain violent and malignant diseases, such, for example, as the malignant forms of fever, and more especially that form of it termed pestilential cholera, this salt taste is scarcely, if at all, perceptible; and it is ascertained that, in such cases, the proportion of saline matter is sensibly diminished.

"The quality of the blood may be also essentially changed by the disturbance of the balance of certain organic functions; digestion, absorption, circulation, respiration, are indispensable to the formation of the blood, and to the nourishment of the tissues. Absorption, nutrition, secretion, circulation, render the blood impure, either by directly communicating to it hurtful ingredients, or by allowing noxious matters to accumulate in it, or by destroying the relative proportion of its constituents. Organs are specially provided, the main function of which is to separate and remove from the blood these injurious substances. Organs of this class are called depurating, and the process they carry on is denominated that of depuration. The lungs, the liver, the kidneys, are depurating organs, and one result at least of the functions they perform is the purification or depuration of the blood. If the lung fail to eliminate carbon, the liver bile, the kidney urine, carbon, bile, urine, or at least the constituents of which these substances are composed, must accumulate in the blood, contaminate it, and render it incapable of duly nourishing and stimulating the organs.

"But though the blood be good in quality and just in quantity, health and life must still depend upon its proper distribution. It may be sent out to the system too rapidly or too slowly. It may be distributed to different portions of the system unequally; too much may be sent to one organ, and too little to another; consequently, while the latter languishes, the former may be oppressed, overwhelmed, or stimulated to violent and destructive action. In either case health is disturbed and life endangered."

(See Hunter on the Blood; Prout, *Inquiry into the Origin and Properties of the Blood, in the Annals of Medicine and Surgery*, vol. i. pp. 10, 133, &c.; Prevost and Dumas, *Mémoire de la Soc. de Physique, &c.*, t. 1.; Bostock's *Elements of Physiology*, vol. i.; Le Canu, *Nouvelles Recherches sur le Sang*, in *Jour. de Pharmacie*, Sept. and Oct., 1833; Dr. Southwood Smith's *Philosophy of Health*, vol. i. chap. 6.)

BLOOD, THOMAS, generally called Colonel Blood, was a native of Ireland, and an adventurer of no ordinary character. Whether he was the son of a blacksmith, or of a person in better condition who had property in iron-works, is uncertain; but he is believed to have been born about 1628. He came over to England and married the daughter of Mr. Holcraft, a Lancashire gentleman, as is supposed, in 1648. He returned afterwards to Ireland, served as a lieutenant in the parliament forces, and had a certain quantity of land assigned to him for his pay. Henry Cromwell put him into the commission for the peace. After the king's restoration, the Act of Settlement in Ireland, by affecting Blood's fortune, made him discontented beyond the common feeling of the republican party, and finding a de-

sign on foot for a general insurrection, which was to be begun by surprising the Castle of Dublin, and seizing the person of the Duke of Ormond, the then lord-lieutenant, he joined it, and ultimately became its leader. The conspiracy, however, which had been long suspected, was discovered upon the eve of its execution. Colonel Blood fled, but one Lackie, a minister (his brother-in-law), with various others, were apprehended, convicted, and executed. Blood remained for a while in Ireland, sometimes harboured by the Oliverians, and sometimes by the native Irish in the mountains; but he at last secured his retreat to Holland, where he is stated to have been received into intimacy by some of the most considerable persons in the republic, and particularly by Admiral de Ruyter. From Holland he came to England, and joined the Fifth Monarchy men, whose plans giving no promise of success he withdrew to Scotland, where he again joined rebellion, and was present in the action of Pentland Hills, Nov. 27th, 1666. After that defeat he fled back to England, thence to Ireland, and thence to England again, where he lived for a time in disguise, meditating revenge against the Duke of Ormond; whom he actually seized on the night of December 6th, 1670, in his coach in St. James's Street, with the intent, as was believed, of carrying him to Tyburn to hang him. When the party had got into the fields, the duke, who was tied on horseback to one of Blood's associates, by a violent effort flung himself and the assassin to the ground, and while they were struggling in the dirt, the duke's servants rescued their master. Blood had so contrived this enterprise, that, though the names of some of his companions were known, he himself was not suspected to be concerned in it; nor, though a reward of 1000*l.* was offered by proclamation to discover the perpetrators of the crime, could any of the gang be apprehended.

The miscarriage of this design put him upon one still more strange and hazardous to repair his broken fortunes. He proposed to the same desperate persons who had assisted him in the former attempt, to join him in seizing the regalia of England: he was to contrive the means, and they were to devote themselves to the service. His scheme was so well laid, and executed with so bold a spirit, that on the 9th of May, 1671, he so far carried his point as to get a part of the regalia (the crown and orb) into his possession. Blood, who had assumed the disguise of a clergyman, concealed the crown beneath his cloak, but was pursued and taken. One of his companions, Parret, had the orb. An authentic narrative of this affair, drawn up by Sir Gilbert Talbot, then master of the jewel-house, from the depositions of Edwards, who was the immediate keeper of the jewels, and who was all but murdered on the occasion, has furnished our historians with the particulars of this transaction.

Blood and his companion Parret, with another of the party of the name of Hunt, who was known to have been concerned in the attack upon the Duke of Ormond, were now committed to the Tower-gaol, where, strange to say, at the instigation of the Duke of Buckingham, then the favourite and first minister, the king himself visited him; finally pardoned him, took him into favour at court, and gave him a pension. For several years applications were constantly made to the throne through the mediation of Colonel Blood; and the indulgence shown to him became a public scandal. Rochester has the following lines in his 'History of Inapids':—

Blood, that wears treason in his face,
Villain complete in parson's gown,
How much he is at court in grace,
For stealing Ormond and the crown!
Since loyalty does no man good,
Let's steal the king and out-do Blood.'

The last line but one probably alludes to old Edwards, who with difficulty obtained an order upon the Exchequer for a payment in reward for endeavouring to save the crown of 200*l.*, and another to his son of 100*l.*; both of which remained so long unpaid, that the parties were each obliged to sell the orders for half their value.

When the ministry styled the 'Cabal' fell to pieces, Colonel Blood's consequence at court declined. He then became an enemy to his former patron, the Duke of Buckingham, for a conspiracy to fix a scandalous imputation upon whom he was convicted in the court of King's Bench, and committed to prison; but finding bail, was allowed to retire to his house in the Bowling Alley in Westminster, where, from disease heightened by disappointed feelings, he died August 24th, 1680.

The Society of the Literary Fund are in possession of two daggers: the one used by Colonel Blood in his attack upon Edwards, the other by an accomplice. The inscriptions on the sheaths of each record the facts. They came to the society, with other residuary property, by the bequest of Mr. Thomas Newton.

(See *Remarks on Some Eminent Passages in the Life of the Fam'd Mr. Blood*, fol. Lond. 1680; Sir Gilbert Talbot's *Narrative of Blut's Attempt on the Crown in the Tower*, M.S. Harl. No. 6859; *Biogr. Britann.*, Kippis's edit. vol. ii. p. 361; and *The Narrative of Colonel Thomas Blood, Concerning the Design Reported to be laid Against the Life and Honour of George, Duke of Buckingham*, folio, London, 1680.)

BLOOD-HOUND, the name of a hound, celebrated for its exquisite scent and unwearied perseverance, qualities which were taken advantage of, by training it not only to the pursuit of game, but to the chase of man. A true blood-hound (and the pure blood is rare) stands about eight and twenty inches in height, muscular, compact, and strong; the forehead is broad, and the face narrow towards the muzzle; the nostrils are wide and well developed; the ears are large, pendulous, and broad at the base; the aspect is serene and sagacious; the tail is long, with an upward curve when in pursuit, at which time the hound opens with a voice deep and sonorous, that may be heard down the wind for a very long distance.

The colour of the true breed is stated to be almost invariably a reddish tan, darkening gradually towards the upper parts till it becomes mixed with black on the back; the lower parts, limbs, and tail being of a lighter shade, and the muzzle tawny. Pennant adds, 'a black spot over each eye,' but the blood-hounds in the possession of Thomas Astle, Esq. (and they were said to have been of the original blood) had not these marks. Some, but such instances were not common, had a little white about them, such as a star in the face, &c. The better opinion is, that the original stock was a mixture of the deep-mouthed southern hound, and the powerful old English stag-hound.

Gervase Markham, in his 'Maison Rustique,' speaking of hounds, says, 'The baie-coloured ones have the second place for goodnesse, and are of great courage, ventring far, and of a quicke scent, finding out very well the turnes and windings . . . they runne surely, and with great boldnesse, commonly loving the stagge more than any other beast, but they make no account of hares. It is true, that they be more head-strong and harde to reclaime than the white, and put men to more paine and travaill about the same. The best of the fallow sort of dogges, are those which are of a brighter haire, drawing more unto the colour of red, and having therewithall a white spot in the forehead, or in the necke, in like manner those which are all fallow; but such as incline to a light yellow colour, being graie or blacke spotted, are nothing worth: such as are trussed up and have dewclawes, are good to make bloudhounds.'

Our ancestors soon discovered the infallibility of the bloodhound in tracing any animal, living or dead, to its resting place. To train it, the young dog accompanied by a staunch old hound was led to the spot whence a deer or other animal had been taken on for a mile or two: the hounds were then laid on and encouraged, and after hunting this 'drag' successfully, were rewarded with a portion of the venison which composed it. The next step was to take the young dog with his seasoned tutor, to a spot whence a man whose shoes had been rubbed with the blood of a deer had started on a circuit of two or three miles: during his progress the man was instructed to renew the blood from time to time, to keep the scent well alive. His circuit was gradually enlarged at each succeeding lesson, and the young hound, thus entered and trained, became, at last, fully equal to hunt by itself, either for the purposes of woodcraft, war, or 'following gear,' as the pursuit after the property plundered in a border foray was termed. Indeed, the name of this variety of *canis domesticus*, to which Linnaeus applied the name of *Sagax*, cannot be mentioned without calling up visions of feudal castles with their train of knights and warders, and all the stirring events of those old times when the best tenure was that of the strong hand.

Sir Walter Scott gives a striking reality to the scene, when he makes the stark moss-trooper, William of Deloraine, who had 'baffled Percy's best blood-hounds,' allude to the pleasure of the chase, though he himself was the object of pursuit, in pronouncing his eulogy over Richard Musgrave,

with the sorrow of a warrior who had lost the stern joy afforded by a hero worthy of his steel

'Yet rest thee God! for well I know
I ne'er shall find a nobler foe.
In all the northern countries here,
Whose word is eagle, spur, and spear,
Thou wert the best to follow gear,
'Twas pleasure as we looked behind,
To see how thou the chase couldst win;
Cheer the dark blood-hound on his way,
And with the bugle rouse the fray!
I'd give the lands of Deloraine
Dark Musgrave were alive again.'

In the same 'Lay' there is one of the best poetical descriptions of the blood-hound in action, if not the best; for though Somerville's lines may enter more into detail, they want the vivid animation of the images brought absolutely under the eye by the power of Scott, where the 'noble child,' the heir of Branksome, is left alone in his terror.

Starting off, he journeyed on,
And deeper in the wood is gone,—
For aye the more he sought his way,
The farther still he went astray,—
'Till he heard the mountains round
Ring to the baying of a hound.
And hark! and hark! the deep-mouthed bark
Comes nigher still and nigher;
Bursts on the path a dark blood-hound,
His tawny muzzle tracked the ground,
And his red eye shot fire.
'Soon as the wildered child saw he,
He flew at him right furiously.
I wren you would have seen with joy
The bearing of the gallant boy,
When, worthy of his noble sire,
His wet cheek glowed 'twixt fear and ire!
He faced the blood-hound manfully,
And held his little bat on high;
So fierce he struck, the dog, afraid,
At cautious distance hoarsely bayed.
But still in act to spring;
When dashed an archer through the glade,
And when he saw the hound was stayed,
He drew his tough bow-string;
But a rough voice cried 'Shoot not, boy!
Ho! shoot not, Edward—'tis a boy!'

Indeed, this feudal dog is frequently introduced by our poet, from his ballads, where Smaylho'me's Lady gay, wooing the Phantom Knight to come to her bower, in the 'Eye of St. John,' tells the spectre that she will 'chain the blood-hound,' down to that grand moonlight scene in the Legend of Montrose, where Dalgetty and Ranald of the Mist are traced to their wood-girt aëry after their escape from Argyle's dungeons.

The pursuit of border forayers was called the *hot-trod*. The 'harried' party and his friends followed the marauders with blood-hound and bugle-horn, and if his dog could trace the scent into the opposite kingdom he was entitled to pursue them thither.

We have only to look into history, and we shall find that moss-troopers, children of the mist, and adventurers, were not the only persons who were put to their shifts to evade the diligence of the sleuth-bratch, or blood-hound. Barbour and Henry the Minstrel relate events where personages no less than the Bruce and Wallace were the principal actors. The former gives accounts of the king's repeated escapes from such pursuits, and the 'wily turns' whereby he threw the hound off the scent. On one occasion he waded a bow-shot down a brook, and climbed a tree which overhung the water. Barbour well describes the 'waver-ing' of the 'sleuth-hund' 'ta and fra,' when it was thrown out by the king's stratagem, and the consequent disappointment of 'Jhon of Lorn.' Henry the Minstrel, in a romantically wild story, relates how, after a short skirmish at Black-Erne side in which Wallace was worsted, the English followed up the retreat which he was forced to make, attended by only sixteen men, with a border blood-hound.

'In Golderland there was that bratchet bred
Siker* of scent, to follow them that fled;
So was he used in Eke and Liddesdail,
Whilst she gat blood no fleeing might avail.'

To spill blood was accordingly the sure way to stop the hound in its career; and Henry states that, upon this occasion, Wallace had been joined by Fawdon or Fadzean, an Irishman of a dark and suspicious character. During the retreat, this man refused to proceed on account of fatigue, either real or fictitious. Wallace argued with him in vain, and irritated by the delay of the retreat and the approach of the enemy, struck off his head:—when the English came up they found their hound by the dead body.

* Sare,

† TUL

The sleuth stopped at Fawdon, till she stood,
Nor farther would fra time she fend the blood.

'The Minstrel' concludes his story with the following catastrophe. The lonely tower of Gask was Wallace's place of refuge. A blast of a horn roused him at midnight. He sent out his men by two and two, but none came back. At last he was alone—and the blast became louder. Down went the hero sword in hand, and, at the gate of the tower, came full upon the headless figure of Fawdon. He fled back into the tower, tore open the boards of a window, leaped down a height of fifteen feet in his terror, and rushed up the river. At length, on looking back, he beheld the tower wrapped in flame, and the dilated form of Fawdon upon the turret holding in its gigantic hand a blazing beam.* But

the knights are dust,
And their good swords are rust—
Their souls are with the Saints we trust'—

and it is necessary to bring down the history of the blood-hound to our own unromantic times.

Sir Walter Scott states that the breed was kept up by the Buccleuch family on their border estates till within the eighteenth century, and records the following narrative:— 'A person was alive in the memory of man who remembered a blood-hound being kept at Eldinhope, in Ettricke Forest, for whose maintenance the tenant had an allowance of meal. At that time the sheep were always watched at night. Upon one occasion, when the duty had fallen upon the narrator, then a lad, he became exhausted with fatigue, and fell asleep upon a bank, near sun-rising. Suddenly he was awakened by the tread of horses, and saw five men well mounted and armed ride briskly over the edge of the hull. They stopped and looked at the flock; but the day was too far broken to admit the chance of their carrying any of them off. One of them, in spite, leaped from his horse, and coming to the shepherd seized him by the belt he wore round his waist; and setting his foot upon his body pulled it till it broke, and carried it away with him. They rode off at the gallop; and the shepherd giving the alarm, the blood-hound was turned loose, and the people in the neighbourhood alarmed. The marauders, however, escaped, notwithstanding a sharp pursuit. This circumstance serves to show how very long the license of the Borderers continued in some degree to manifest itself.'

This, perhaps, is the last instance of an attempted 'Border foray' on record. The times were changed. The nobles had ceased to pride themselves on their ignorance of all the arts save the art of war, and to make it matter of thanksgiving that they knew not how to use the pen.† Civilization advanced as learning was diffused, till the law of the strongest no longer prevailed against the law of the land. The blood-hound, from the nobler pursuit of heroes and knights, 'minions of the moon,' who swept away the cattle and goods of whole districts, marking the extent of their 'raid by all the horrors of fire and sword, sank to the tracker of the deer-stealer and petty felon. About a century and a quarter ago, when deer-stealing was a common crime, the park-keepers relied upon their blood-hounds principally for detecting the thief; and so adroit were these dogs, that when one of them was fairly laid on, the escape of the criminal was with good reason considered to be all but impossible. Even now the breed still lingers about some of the great deer-parks; and many of our readers will remember the noble specimen at Richmond Park, bearing the name of Procter, and the admirable study of his head engraved by T. Landseer from a painting by his brother Edwin, published in the *Sporting Magazine*. In the spring of this year (1835), there was a grand picture of one of these dogs in a sleeping attitude by Edwin Landseer, exhibited in the British Gallery, Pall Mall. It is said that the original unfortunately broke its neck in leaping out of a window in London, and application was immediately made to the painter to perpetuate the memory of so fine a hound.

This noble variety is now only kept as an object of curiosity and ornament; for its services have long since been superseded by the justice's warrant and the police-officer. We find it, indeed, recorded about thirty years ago, that 'the Thrapston association for the prevention of felons in Northamptonshire have provided and trained a blood-hound

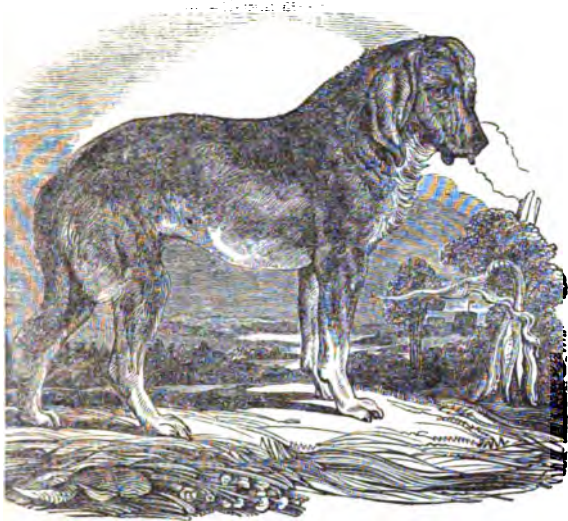
* See Sir Walter Scott's notes to his 'Lay of the Last Minstrel.'

† Thanks to Saint Bothan, son of mine,
Sare Gawain, ne'er could pen a line;
So swore I, and I swear it still,
Let my boy-bishop fret his fill!

exclaims 'the Douglas' in *Marmion*.

for the detection of sheep-stealers. To demonstrate the unerring infallibility of this animal a day was appointed for public trial; the person he was intended to hunt started, in the presence of a great concourse of people, about ten o'clock in the forenoon, and at eleven the hound was laid on. After a chase of an hour and a half, notwithstanding a very indifferent scent, the hound ran up to the tree in which he was secreted, at the distance of fifteen miles from the place of starting, to the admiration and perfect satisfaction of the very great number assembled upon the occasion.* But this may be considered more in the light of a proceeding in *terrorem* than anything else.

Strong and hardy as the blood-hound seems to be, it is unable, apparently, to encounter a low temperature. Mr. Lloyd, in his 'Field Sports,' relates that one presented to him by Mr. Otway Cave was entirely paralyzed by the piercing cold of the northern regions which were the scene of his exploits.



[English blood-hound.]

Cuban Blood-hound.—The reputation which this variety has obtained for sagacity and fierceness, and the share that the terror of its name had in extinguishing the last Maroon war in Jamaica, render it an object of some interest. In 1733 these Maroons had become very troublesome, and the Assembly, among other plans for suppressing them, appointed garrisons, from whose barracks excursions were from time to time made against the insurgents. 'Every barrack,' says Bryan Edwards, 'was also furnished with a pack of dogs, provided by the churchwardens of the respective parishes, it being foreseen that these animals would prove extremely serviceable, not only in guarding against surprises in the night, but in tracking the enemy.' The tiresome war went on, however, till at last articles of pacification with the Maroons of Trelawney town were concluded on the 1st of March, 1738. This alliance continued, not without frequent complaints of the conduct of the Maroons, till July, 1795, when two of these people from Trelawney town, having been found guilty by a jury of stealing some pigs, were sentenced to receive thirty-nine lashes each, and the sentence was executed. On their return to Trelawney town their account drove the Maroons into open revolt, and a bloody and successful war was waged by these savages against the whole force that the government could direct against them.

At last, the Assembly, in the month of September, remembering the expedient of employing dogs previous to the treaty of 1738, resolved to send to the Island of Cuba for one hundred blood-hounds, and to engage a sufficient number of Spanish huntsmen to direct their operations. The employment, according to Edwards, to which these dogs are generally put by the Spaniards, is the pursuit of wild bullocks, which they slaughter for the hides; and the great use of the dogs is to drive the cattle from such heights and recesses in the mountainous parts of the country as are least accessible to the hunters. This determination of the Assembly was not made without some opposition. It was urged 'that the horrible enormities of the Spaniards in the

* *Sportsman's Cabinet*, vol. ii. p. 96.

conquest of the new world would be brought again to remembrance.' 'It is mournfully true,' continues Bryan Edwards, 'that dogs were used by those Christian barbarians against the peaceful and inoffensive Americans, and the just indignation of all mankind has ever since branded, and will continue to brand, the Spanish nation with infamy for such atrocities. It was foreseen and strongly urged as an argument against recurring to the same weapon in the present case, that the prejudices of party and the virulent zeal of faction and bigotry would place the proceedings of the Assembly on this occasion in a point of view equally odious with the conduct of Spain on the same blood-stained theatre in times past. No reasonable allowance would be made for the wide difference existing between the two cases. Some gentlemen even thought that the co-operation of dogs with British troops would give not only a cruel but also a very dastardly complexion to the proceedings of government.'

In answer, it was said that the safety of the island and the lives of the inhabitants were not to be sacrificed to perverse misconstruction or wilful misrepresentation of the mother country. The use of elephants, and even of cavalry, was brought forward in support of the determination, and the doctrine laid down in Paley's *Moral Philosophy*, vol. ii. p. 417, that if the cause and end of war be justifiable, all the means that appear necessary to that end are justifiable also, was quoted.

At length, after several delays, the commissioner, who had been despatched to the Havanna, arrived at Montego Bay on the 14th of December with forty chasseurs, or Spanish hunters, chiefly people of colour, and about 100 Spanish dogs.

When these new allies were landed, the wild and formidable appearance of the men and dogs spread terror through the place. The streets were cleared, the doors were shut, not a negro ventured to stir out, as the muzzled dogs, ferociously making at every object, and dragging forward the chasseurs, who with difficulty held them in with heavy rattling chains, proceeded onwards.

Dallas, in his history of the Maroons, gives the following account of their first appearance before the commander-in-chief:—'Anxious to review the chasseurs, General Walpole left head-quarters the morning after they were landed before day-break, and arrived in a post-chaise at Seven Rivers, accompanied by Colonel Skinner, whom he appointed to conduct the intended attack. Notice of his coming having preceded him, a parade of the chasseurs was ordered; and they were taken to a distance from the house, in order to be advanced when the general alighted. On his arrival, the commissioner having paid his respects, was desired to parade them. The Spaniards soon appeared at the end of a gentle acclivity, drawn out in a line containing upwards of forty men, with their dogs in front unmuzzled, and held by cotton ropes. On receiving the command 'fire' they discharged their fusils and advanced as upon a real attack. This was intended to ascertain what effect would be produced on the dogs if engaged under a fire of the Maroons. The volley was no sooner discharged than the dogs rushed forward with the greatest fury, amid the shouts of the Spaniards, who were dragged on by them with irresistible force. Some of the dogs maddened by the shout of attack, while held back by the ropes, seized on the stocks of the guns in the hands of their keepers, and tore pieces out of them. Their impetuosity was so great that they were with difficulty stopped before they reached the general, who found it necessary to get expeditiously into the chaise from which he had alighted; and if the most strenuous exertions had not been made to stop them, they would most certainly have seized upon his horses.'

This scene was well got up, and it had its effect. General Walpole was ordered to advance on the 14th of January following, with his Spanish dogs in the rear. Their fame, however, had reached the Maroons, and the general had penetrated but a short way into the woods when a supplication for mercy was brought from the enemy, and 260 of them soon afterwards surrendered on no other condition than a promise of their lives. 'It is pleasing to observe,' adds Bryan Edwards, 'that not a drop of blood was spilt after the dogs arrived in the island.' The war, as is well known, terminated with the expatriation of the Maroons in June, 1796, to Halifax in North America.

It is stated that these dogs, when properly trained, will not kill or harm the pursued unless they are resisted. 'On reaching a fugitive they bark at him till he stops, and then

couch near him, terrifying him with a ferocious growling if he stirs. They then bark at intervals to give notice to the chasseurs, till they come up and secure their prisoner. Each chasseur is obliged to have three dogs, though he hunts with two only, and these he maintains at his own expense: he lives with his dogs, and is inseparable from them. At home they are kept chained, and when walking with their masters are never unmuzzled or slipped from their ropes, except for attack. One or two small dogs called finders, whose scent is very keen at hitting off a track, accompany them. Dogs and bitches hunt equally well, and the chasseurs rear no more than will supply the required number. Though the breed is said not to be so prolific as the commoner varieties of the dog, it is stated to be infinitely stronger and hardier. It is described as of the size of the largest hound, with erect ears, which are usually cropped at the points, with the nose rather pointed, but widening much towards the hinder part of the jaw. The skin and coat, it is added, are much harder than those of most dogs, and it is said that the severe correction which they undergo in training would almost kill any other description of dog; this, however, may be doubted. There are some whose nose is more obtuse, and whose frame in general is more square, and these it is thought have been crossed with the mastiff; but if the bulk of the animal has been a little increased by the cross, it is not considered that the mixture has added anything to the strength, height, beauty, or agility of the native breed. [See MASTIFF.]

Bryan Edwards, in a note to his appendix, gives a very different account of these Cuban blood-hounds:—'Though these dogs,' he observes, 'are not in general larger than the shepherd's dogs in Great Britain (which in truth they much resemble), they were represented as equal to the mastiff in bulk, to the bulldog in courage, to the blood-hound in scent, and to the grayhound in agility. If entire credence had been given to the description that was transmitted through the country of this extraordinary animal, it might have been supposed that the Spaniards had obtained the antient and genuine breed of Cerberus himself, the many-headed monster that guarded the infernal regions.'

Dallas, who had his information from the commissioner himself, William Dawes Quarrell, to whom his work is dedicated, gives a description and representation of one of these



[Chasseur with Cuban blood-hounds.]

Spanish chasseurs with his dogs; and he relates the following instances of the strength and determined ferocity of the latter.

* The party had scarcely erected their huts when the barking of a dog was heard near them. They got immediately under arms, and, proceeding in the direction of the sound,

discovered a negro endeavouring to make his escape. One of the Spanish dogs was sent after him. On coming up, the negro cut him twice with his muschet,* on which the dog seized him by the nape of the neck and secured him. He proved to be a runaway, said that he and two other negroes had deserted the Maroons a few days before, and that the party was at a great distance from the town, but that he would conduct them to it by noon next day.'

In the next anecdote recorded by Dallas, the attack was fatal both to the unhappy object of it and to the dog. 'One of the dogs that had been unmuzzled to drink when there was not the least apprehension of any mischief, went up to an old woman, who was sitting attending to a pot in which she was preparing a mess. The dog smelled at it and was troublesome; this provoked her; she took up a stick and began to beat him, on which he seized on her throat, which he would not let go till his head was severed from his body by his master. The windpipe of the woman being much torn, she could not be saved.'

When there is such discrepancy it becomes interesting to ascertain what the Cuban blood-hound is really like. A dog and a bitch, said to be of the true breed, were lately brought to this country, where, soon after their arrival, the bitch littered ten pups, one of them deformed. Here, at least, the statement that the Cuban blood-hound is not so prolific as the common dog was not borne out. Some of these pups we have seen, and we are enabled to give a description and figure of the variety. They are shorter on their legs than the English variety; the muzzle is shorter, and the animal is altogether smaller, with less of the hound about it than the English blood-hound has; the height is about two feet; the colour generally tawny, with black about the muzzle, or brindled like some of the Ban-dogs. They show great attachment, and are very gentle till seriously provoked, and then their ferocity is alarming.



[Cuban blood-hound.]†

In Cuba, the common employment of these dogs was to traverse the country in pursuit of murderers and other felons, and an extraordinary proof of their activity is recorded by Dallas, who states that the event occurred about a month before the arrival of the commissioner at the Havana. A fleet from Jamaica, under convoy to Great Britain, passing through the Gulf of Mexico, beat up on the north side of Cuba. One of the ships, manned with foreigners, chiefly renegade Spaniards, being a dull sailer, and consequently lagging astern, standing in with the land at night, was run on shore, the captain, officers, and the few British hands on board murdered, and the vessel plundered by the Spanish renegadoes. The part of the coast on which the ship was stranded being wild and unfrequented, the

* A long straight muschet, or couleau, longer than a dragon's sword, and twice as thick, something like a flat iron bar sharpened at the lower end of which about eighteen inches are as sharp as a razor. The point is not unlike the old Roman sword. Such is Dallas's description of the chasseur's muschet.

† Our drawing was taken from a dog which had not attained its full growth.

assassins retired with their booty to the mountains, intending to penetrate through the woods to some remote settlements on the south side, where they hoped to secure themselves and elude all pursuit. Early intelligence of the crime, however, had been conveyed to the Havanna, and the assassins were pursued by a detachment of twelve of the chasseurs del Rey with their dogs. In a few days the criminals were all brought in and executed, not one of them being in the least hurt by the dogs when captured.

African Blood-hound.—On his return from Africa, the late Colonel Denham, then major, presented two dogs and a bitch of this variety to the royal menagerie in the Tower, which, under the care of the keeper, Mr. Cops, then contained a very choice collection of animals, recorded in that interesting publication, *The Tower Menagerie*, London, 8vo. 1829. The Major informed Mr. Cops that with them he hunted the gazelle, and that they displayed great cunning, frequently quitting the circuitous line of scent for the purpose of cutting off a double, and recovering the scent again with ease. They would hit off and follow a scent after a lapse of two hours from the time when the animal had been on the spot, and this delicacy of nose had not escaped observation, for they were applied to nearly the same purposes as the other varieties here mentioned, and were commonly employed in Africa to trace a flying enemy to his retreat. It is well remarked in the work last above-mentioned that for symmetry and action they were perfect models, and a regret is expressed that, in consequence of their not having shown any disposition to perpetuate their race, though they had, at the time of making the observation, been three years in England, there appeared to be no chance of crossing our pointers with this breed. We agree with the writer in thinking that this blood so introduced would be a very valuable acquisition. It was remarked that, of the three in the Tower, the males were very mild, but the female was of a very savage disposition.



[African blood-hound.]

BLOOMFIELD, ROBERT, an English pastoral poet, the youngest of six children of George Bloomfield, a tailor at Honington, a village near Bury St. Edmunds in Suffolk, where Robert was born, December 3, 1766. Having in early infancy lost his father, his mother obtained a scanty subsistence for her family by keeping a little school, in which he himself was taught to read. Her poverty with difficulty affording him even necessary clothing, at the age of eleven he was hired in the neighbourhood as a farmer's boy; but being found too feeble for agricultural labour, he was placed with a relative in London to become a shoemaker. With no assistance or stimulus beyond the reading of a newspaper, and a few borrowed books of poetry, of which his favourite was Thomson's 'Seasons,' he composed his beautiful rural poem 'The Farmer's Boy' in a poor garret, No. 14, Bell Alley, Coleman Street, whilst at work with six or seven others, who paid each a shilling a week for their lodging. The MS., after being offered to, and refused by, several London publishers, was printed under the patronage of Capel Loft, Esq., in 1800; and the admiration it produced was so general that, within three years after its publication, more than 26,000 copies were sold. The appearance of such refinement of taste and sentiment in the person of an

indigent artisan, elicited general praise; but the extravagant and indiscriminate applause of Mr. Loft may well be considered as more injurious to Bloomfield's reputation even than such contemptuous derision as that of Byron in his 'English Bards.' An edition was published in the following year at Leipzig. At Paris a translation, entitled 'Le Valet du Fermier,' was made by Etienne Allard; one was also made into Italian; and in London appeared, in 1805, 'Agricolæ Puer, poema Roberti Bloomfield celeberrimum, in versus Latinos redditum' auctore Gulielmo Clubbe, LL.B., a very clever effort in imitation of the Georgics.

The fame of Bloomfield was increased by the subsequent publication of 'Rural Tales, Ballads, and Songs,' 'Good Tidings, or News from the Farm,' 'Wild Flowers,' and 'Banks of the Wye.' He was kindly noticed by the Duke of Grafton, by whom he was appointed to a situation in the Seal Office; but suffering from constitutional ill-health, he returned to his trade of ladies' shoemaker, to which, being an amateur in music, he added the employment of making Æolian harps. A pension of a shilling a day was still allowed him by the duke; yet having now, besides a wife and children, undertaken to support several other members of his family, he became involved in difficulties; and, being habitually in bad health, he retired to Shefford in Bedfordshire, where, in 1816, a subscription, headed by the Duke of Norfolk and other noblemen, was instituted by the friendship of Sir Egerton Brydges, for the relief of his embarrassments. Great anxiety of mind, occasioned by accumulated misfortunes and losses, with violent incessant headaches, a morbid nervous irritability, and loss of memory, reduced him at last to a condition little short of insanity. He died at Shefford, Aug. 19th, 1823, at the age of fifty-seven, leaving a widow and four children, and debts to the amount of 200*l.*, which sum was raised by subscription among his benevolent friends and admirers. In the following year, at the sale of his MSS., that of 'The Farmer's Boy,' in his own handwriting, was sold for 14*l.*

The works of Bloomfield have been published in 2 vols. 12mo. 'Hazlewood Hall,' which appeared a short time before his death, has little merit in comparison with his earlier productions. His 'Remains,' consisting of Songs, Anecdotes, Remarks on Æolian Harps, Tour on the Wye, &c., were edited by J. Weston, Esq., 1824. The 'Farmer's Boy,' 'Wild Flowers,' with several of the 'Ballads and Tales,' are his best poems; and many critics, such as James Montgomery, Dr. Nathan Drake, and Sir Egerton Brydges, have expressed the highest admiration of their chaste and unaffected beauties. The author's amiable disposition and benevolence pervade the whole of his compositions. There is an artless simplicity, a virtuous rectitude of sentiment, an exquisite sensibility to the beautiful, which cannot fail to gratify every one who respects moral excellence, and loves the delightful scenes of English country life. Those who are charmed only with lofty and obscure conceptions, or a pompous parade of words, will find nothing to their taste in the simple descriptive poetry of Robert Bloomfield.

BLOW-PIPE. The instrument to which his name has been applied, was originally employed by jewellers and others in the soldering of metals on the small scale, whence it derives its name in the German language 'Löthrohr,' from the two words 'löthen,' to solder, and 'rohr,' a tube or pipe. When used for such purposes it is constructed of a simple metallic tube seven or eight inches in length, the bore of which at the larger extremity is about one-fourth of an inch in diameter, and gradually contracts as it approaches the other, where it terminates in an almost capillary orifice; and the instrument is formed by simply bending this tube at a right angle at an inch or an inch and a half from its finer extremity. In this form it is used by the workman to direct the flame of a lamp on the portion of solder to be employed, by which he is enabled to bring it readily and without loss of time into a state of fusion: the solder is placed on a fragment of charcoal, which he holds in his left hand, and upon which the flame is made to play by blowing a gentle current of air against it by means of the pipe.

Such was its sole use until the year 1738, when, as we are informed by Bergman, Antony Swab, a Swedish berg-rath, or counsellor of mines, and a many of very considerable knowledge for his time, introduced it to the notice of the scientific world, by employing it in determining the nature of the metals in the various ores and minerals which came under his notice. Swab however wrote no work on the

subject, nor does it appear to have received any particular attention from any one until Cronstedt proposed his system of mineralogy, in which the arrangement is dependent on the chemical composition of the minerals. It thus became to him of vital importance for the general adoption of his system—we may almost say for its very existence—to possess some ready and simple means of determining the constituents of mineral bodies, as it was evident that those offered by the slow and laborious operations of chemical analysis could not be generally employed by mineralogists. This he found in the blow-pipe, and by the employment of fluxes in the experiments performed with this instrument, he may be considered as the founder of a new department of the chemical science. His results are to be found in his 'System of Mineralogy,' the first edition of which was published in 1758, and was translated into English by Von Engeström in 1765; also in an essay by the latter, published in London in 1770 under the title of 'An Essay towards a System of Mineralogy,' by Cronstedt, translated from the Swedish by Von Engeström, revised and corrected by Mendez da Costa. London, 1770.

The employment of the blow-pipe in detecting the constituents of minerals being thus brought into notice, excited the attention of the chemists and mineralogists to the cultivation of this branch of chemistry, and its application to chemical analysis and to the determination of the mineralogical species. In Sweden however it still appears to have been studied with the greatest success; and it is to the chemists and mineralogists of Sweden that we are indebted for the greater portion of the information which has been received on this subject, and more particularly to Bergman, Gahn, and Berzelius. Bergman, after extending its limits by a series of original researches, in which he investigated the properties of most of the then known species of minerals, and by a more general application to chemical analysis, published the results of his observations in a treatise written in the Latin language, which appeared at Vienna in 1779 under the following title, 'De Tubo Ferruminatorio, ejusdemque usu in explorandis Corporibus, presortim Mineralibus.' A translation of the above into English will be found in the second volume of Bergman's 'Chemical and Physical Essays,' by Dr. Cullen, London, 1788. Gahn, though indefatigable in his observations and experiments with the blow-pipe, and though far exceeding any of his predecessors both in the conception and execution of his experiments, has however left no work on the subject. As an instance of his power of detecting the presence of metallic bodies, we are told by Berzelius that he has often seen him extract from the ashes of a quarter of a sheet of paper distinct portions of copper, and that too before the knowledge of the occurrence of this metal in vegetables was known, and therefore before he could have been led from this circumstance to suspect its presence in paper.

Although we cannot but feel regret at having received no work from a man so eminently qualified to instruct on this subject as Gahn, still we must consider ourselves most happy that under such circumstances the loss of the knowledge and experience of so long and laborious a life is not also to be lamented. Fortunately for science, accident, as it were, made Berzelius the medium through which this information was to be communicated to the world; and while his good fortune in thus having it in his power to add another to the many benefits he has bestowed on mankind cannot but be envied, it must be universally felt and acknowledged that if he has been favoured by fortune he has proved himself one of the most worthy of her favour by the manner in which he has fulfilled the task assigned to him. The assiduity of Gahn in this study, together with the circumstances to which we are indebted for the preservation of his labours, cannot be better told than in the words of Berzelius himself. 'Gahn,' says he, 'was never without his blow-pipe, not even during his shortest journeys. Every new substance, or any thing with which he was not previously acquainted, was immediately submitted to an examination before the blow-pipe; and it was indeed an interesting sight to observe with what astonishing rapidity and certainty he was thus enabled to determine the nature of a body, which from its appearance and exterior properties could not have been recognised. Through this constant habit of using the blow-pipe he was led to invent many improvements, and to make many conveniences, which he could have at hand whether at home or abroad: he examined the action of a number of re-agents, for the purpose

of finding new methods of recognising bodies, and this he did in such detail, and conducted his operations with such accuracy, that all his results may be relied upon with the greatest confidence. Nevertheless it never occurred to him to give a written description of his new or improved methods; he gave himself however all possible trouble to instruct all who were willing to learn, and many foreign men of science, who passed some time with him, have made known his great dexterity in this subject; but no one has communicated a perfect knowledge of his methods.

'I had the good fortune, during the last ten years of the life of this in many respects most remarkable man, to enjoy his most intimate acquaintance. He spared himself no trouble to communicate to me all the results of his experience, and I have consequently held it as a sacred duty to allow nothing of this experience and of his labours to be lost.'

Such then is the origin of Berzelius's treatise, a work which must be considered as the highest authority on this subject; and as there are translations in the English, French, and German languages, we cannot too highly recommend it to the study of those desirous of obtaining a more intimate acquaintance with the uses to which the blow-pipe may be applied. The English translation is however unfortunately taken from the first edition of the text; the title is 'The use of the Blowpipe in Chemical Analysis, and in the Examination of Minerals,' by J. J. Berzelius. Translated from the French of M. Fresnel, by J. G. Children, London, 1822.

As our limits will not allow of our entering into the description of the phenomena presented by the different chemical elements and minerals, when experimented on by the blow-pipe, we must confine ourselves to a general description of the nature of the experiments performed by this instrument, and the conclusions to which it leads in determining the chemical constitution of a mineral, and consequently in recognizing to what species it belongs. For this purpose it may be convenient to class the experiments under four heads:—

1. The characteristic changes produced on bodies when exposed to a high temperature.
2. The deoxidizing effect of the flame, and the reduction of metals from their ores.
3. The oxidizing effect, or the changes produced by the oxygen of the air on the body.
4. The action produced by the application of fluxes or re-agents.

The first three classes are dependent on the unaided action of the blow-pipe flame, and as the total effect is produced by properties peculiar to particular parts of the flame even in the cases where fluxes are employed, it becomes a matter of great importance to possess a good knowledge of the flame itself, a description of which will therefore be first given. If a burning lamp or candle be carefully observed, it will be found that the flame may be divided into four parts, which may readily be distinguished from each other. Firstly, on the lower extremity of the flame, where it is in contact with the wick, will be seen a blue portion, which

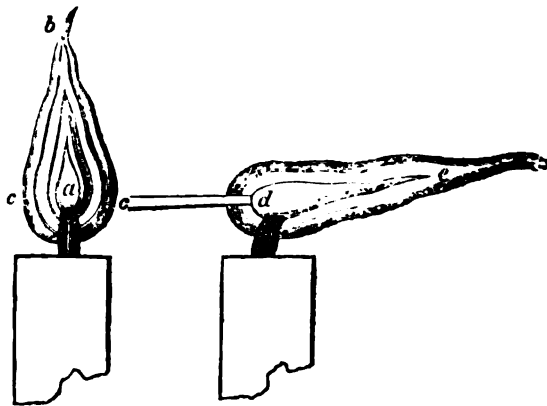


Fig. 1.

Fig. 2.

extends from the wick and terminates at the points c fig. 1, where the boundaries of the flame assume a vertical direction. The second most striking part of the flame is the bright intensely luminous portion b, which rising as it were

from out of the cup produced by the blue, ascends in the form of a cone. In close connexion with this cone will be observed a smaller one *a* contained within it, of a dark colour, and rising from the upper extremity of the wick; and by a very careful examination it will be found that the outer surface of the luminous cone is bounded by a thin coating of a slightly luminous flame *c b*, which forms the continuation of the blue ring, and increases a little in thickness as it approaches the upper extremity.

The three cones thus enveloping each other differ not only in their appearance, but also in their temperature and chemical condition. Flame, as was shown by Sir Humphrey Davy in the course of his beautiful and philosophical inquiries into its nature, which terminated with the discovery of his safety-lamp, is gaseous matter heated to whiteness: its most striking properties are evidently its power of communicating light and heat, and however closely these may appear to be connected, the circumstances by which the one may be developed to its greatest extent in a flame is unfavourable to the production of the other. The explanation of this is simple and obvious: the heat depends on the rapidity and energy of the chemical combinations taking place; the light on the contrary on the quantity of the matter kept at the white heat, and on the length of time it remains in that state. If therefore into a stream of burning gas (to take a particular case, let it be coal gas) a jet of oxygen be conducted, the combustion will be immediately rendered more rapid, the temperature of the flame will consequently rise, while its illuminating power diminishes, as will probably have been observed by many who have seen the oxy-hydrogen flames, where the light is derived only from the strongly heated chalk, not from the burning gases. On applying these views to the common flame, the existence of the three concentric cones will be readily understood: in the exterior cone, the inflammable gases arising from the decomposition of the burning material come in direct contact with the atmosphere, are well supplied with oxygen, and they consequently here undergo a more rapid combustion than the interior enclosed portions: here therefore will be found the hottest points of the flame. That such is really the fact may be proved experimentally, by holding a fine iron or platinum wire across the flame, when it will be found to glow most strongly in the points of its emergence from the luminous cone, and by holding the wire at different elevations in the flame, it will be found that the portion of the outer cone immediately above *c*, the upper ridge of the blue cup, is the point of greatest heat. In the most luminous cone the combustion is slower, and in the interior darker portion, the gases have not yet come into contact with the air, and are still unchanged.

If a fine current of air be now directed into the flame by means of the blow-pipe, it will assume the appearance seen in *fig. 2*: in the centre of the flame, and immediately proceeding from the orifice of the tube, a long and thin blue portion in the position *d e* of the figure will be seen: this corresponds with the blue cup of the natural flame. But it was in the upper edge of this cup, in which were found the points of greatest heat, and the same is true here also, with this difference however, that while in the natural flame these points were spread over a considerable circle, *c c*, in the blow-pipe flame they are all collected into the one point *e*, where their united effect is of course proportionably great. The reason therefore of the high temperature which may be produced by the blow-pipe is the result of the concentration of the hottest points of the flame into a focus; and another circumstance tends also to heighten this effect, that while in the natural flame the points of greatest heat are on its outer boundaries, and are therefore rapidly robbed of their temperature, they here occur encased by the luminous flame which thus protects them against the loss of temperature from this cause.

The blow-pipe employed by the workman in the soldering of metals, and constructed as was first described, cannot be employed in these operations, owing to the collection of the water from the condensed moisture of the breath on continuing the blast any time. This inconvenience is avoided by making the blow-pipe of two pieces, and by interposing between these a receptacle for retaining the water, which is thus prevented from entering into the finer part of the pipe where it would obstruct the current of air. In using the blow-pipe the operator must not employ his lungs in producing the current of air, as it would not only be detrimental to his health, but he would be unable to sustain the

blast a sufficient length of time to ensure the necessary effects: it is produced by inflating the mouth with air, which is then forced through the tube by contracting the muscles of the cheek, and by a little practice the blast may be thus sustained for a considerable time, the process of respiration being unaffected, the only inconvenience arising from the fatigue of the muscles of the cheek from their unusual exercise. The power of being able to perform this depends on the individual being able to keep his mouth inflated while he respire. After this has been learnt, some little experience will be required to enable the operator to regulate the strength of the blast, so as to produce the most powerful heat, as it must be neither too strong nor too weak; in the first case the heat is diminished in its action by an excess of air, and in the second too feeble a flame is produced.

We now proceed to the experiments themselves to which the blow-pipe may be applied, and we commence with those which fall under the first class.—The changes produced on a body when exposed to a high temperature. Of these, four are particularly worthy of notice:—

Its fusibility.

The changes produced in its colour.

The volatilization of the substance under examination.

The volatilization of one or more of its component parts.

When the various elements or their compounds, which occur in a solid form at the usual temperature, for these alone can here be considered, are exposed to heat, there is always evidence of a force tending to overcome that cohesion of their particles to which they owe their solid form, and it is believed that by a sufficient degree of temperature any body whatever might be made to pass to the state of vapour, either immediately or through the intermediate stage of fluidity. However this may be, it is well known that the temperature at which such changes are effected varies with each element, and the point which the blow-pipe first informs us upon is, whether the body is one of those which are unchanged or not at the degree of heat capable of being produced by means of it; and according to the result we know among what class of bodies the one under consideration will be found. Nor is this mere fact the sole guide to the knowledge of the body under examination; the facility or difficulty with which the change is effected, the characters of the substance in its changed form, the appearance it assumes on being again allowed to cool, open to us new sources of information, and each must be carefully observed. Thus in some minerals the fusion is produced with ease; in others again it can only be effected slowly and by the strongest heat we can produce; while in a third case our efforts will only be sufficient to round off the sharp edge of a fine fragment.

But these are by no means the most important changes, the relations of the elements to oxygen gas being decidedly more interesting and instructive. When any substance combines with oxygen gas it is said to be oxidized, and when a compound of oxygen with any base loses oxygen, it is said to be deoxidized or reduced to a lower state of oxidation, according as it has lost the whole or a part of its oxygen. Most bodies, and particularly all the metals, are capable of undergoing the one or the other of these changes; and as by means of the blow-pipe we have it in our power to produce at pleasure the conditions under which a metal is liable to be oxidized, as well as those which are favourable to its reduction, should it be present in the form of an oxide; and as these changes are usually accompanied with striking and characteristic phenomena, the blow-pipe is thus the most powerful instrument in detecting the presence of metals, which may in many cases be extracted in their perfect metallic form from the smallest fragment of their ore.

The oxidation will be produced by holding the body before the outer extremity of the flame, where the elements being heated in contact with the oxygen of the air, are placed in the most favourable circumstances for combining with it. This takes place the more readily the further the assay is held from the flame, provided a sufficient temperature is at the same time obtained; nor is it necessary that this should be very great, since too great a heat is disadvantageous, particularly when the support is of charcoal. This process will be best performed with a pipe of comparatively large orifice, and when the material is kept at a low red heat.

The deoxidation or reduction requires a small orifice, and the substance under examination should be as much as

possible surrounded by the luminous flame, by which means it is cut off from contact with the atmospheric oxygen, and is surrounded with a glowing combustible gas, by which it is deprived of its oxygen. In performing this operation, which is infinitely more difficult than that of oxidation, particular attention must be paid to keep the assay constantly in the luminous flame, as the action is but little assisted by the charcoal on which the substance rests. Berzelius recommends the beginner to practice himself in the reduction of metals by fusing small grains of tin on charcoal, and to endeavour to keep it in that state without allowing its surface to lose the metallic glance, which it does owing to the formation of the oxide, the instant it is removed from the deoxidizing flame. This operation should first be attempted on very small fragments, as the difficulty increases with the size of the tin grains.

We now come to speak of the experiments in which fluxes are employed, the most important of which and their uses will be briefly described. They are, carbonate of soda, borate of soda, the double phosphate of soda and ammonia, saltpetre, boracic acid, bisulphate of potash, gyps, fluor-spar, nitrate of cobalt, tin, iron, lead. Of these the first three only are of general use, while the others are employed to test the presence of particular bodies: we shall confine our attention therefore to the former, as to touch upon the particular cases in which the others may be advantageous would not only lead us too much into detail, but belongs more particularly to the chemical description of the properties of these bodies.

Care should be taken that the carbonate of soda employed for these experiments be free from any impurities, particularly from the sulphate. The purest which can be purchased is the bicarbonate of commerce: if this cannot be obtained, a saturated solution of the ordinary carbonate should be taken, through which a current of carbonic acid must be transmitted, when the bicarbonate will be precipitated in the form of fine grains, which must be washed with cold water and then dried. It may be tested for sulphuric acid by means of the blow-pipe itself in the following manner:—Let a glass be formed by fusing a portion of the carbonate of soda with a small quantity of pure silica, and let the resulting glass be well acted on by the deoxidizing flame. If on cooling it retains its colourless condition, the soda may be considered free from sulphuric acid, the presence of which would be indicated by the glass assuming a yellow passing into a hyacinth-red colour, owing to the presence of the liver of sulphur. The application of soda answers two purposes: to determine whether the body is fusible in it as a flux, and to assist in the reduction of metals. The soda is best applied by mixing it in powder with the substance to be examined, which should also be in powder: the mixture is formed into a paste by the addition of a little water, a small portion of which must then be placed on the charcoal, where, after drying, it must be brought into a state of fusion. It is usual for the soda, as soon as it is fused, to be entirely absorbed by the charcoal, but it is not on that account less active: a continued effervescence is observed on the substance under examination, and its fusibility is indicated by the formation of a glass globule.

But the greatest use of soda is decidedly in promoting the reduction of metals, which it does in a most unaccountable manner. If a small quantity of the oxide of tin be placed on the charcoal, a dexterous blower, at some expense of time and trouble, will be able to obtain from it a small globule of metallic tin. If however a little carbonate of soda be added to the oxide of tin, the reduction is effected with ease and rapidity.

The influence of the soda in this operation is not understood, but its action is constant; and Gahn has given the following process, by which the metals platinum, gold, silver, molybdenum, tungsten, antimony, tellurium, bismuth, tin, lead, copper, nickel, cobalt, and iron may be obtained, and consequently their presence detected, whenever they occur in any ore.

The assay is reduced to powder, and formed as before into a paste with the moistened soda: this must then be placed on the charcoal, and submitted to the action of a good reducing flame. After some time an additional quantity of soda must be added, and the blast must be again renewed, and this process must be repeated until the whole of the assay is absorbed by the charcoal. When this is entirely effected, those portions of the charcoal which have thus become saturated with soda, must be moistened by a few drops of water, and they must then be carefully removed with a

knife and reduced to powder in an agate mortar. This must then be washed, by which the fine and light particles of charcoal may be readily removed from the metallic particles, which, if any be present, will be found in a pure metallic form in the mortar. The form in which the metal will be found depends on its fusibility and malleability: should it possess these properties, it will be formed into small thin leaves; if not, it will be found as a metallic powder. By this process the operator should be aware that the metals antimony, bismuth, and tellurium may have escaped his observation, from having been volatilized as soon as reduced, which is also always the case with selenium, arsenic, cadmium, zinc, and mercury, which can only be obtained by sublimation.

The borate of soda of commerce is never sufficiently pure for these purposes, but it may readily be obtained fit for use by solution in pure water and re-crystallization. It may be employed either in the form of small grains, or of powder, or it may be first fused to free it from its water of crystallization. The advantages of its use in the blow-pipe are dependent on its forming a most powerful flux, by which a number of otherwise refractory substances may readily be brought into a state of fusion. It is usual, in the first place, to endeavour to fuse a small fragment of the assay; as, if this process be successful, we are able to observe the phenomena taking place during the fusion better than when it is applied in the form of a powder; and what is the most important, we see whether the assay is partially or entirely fusible in this flux. The principal facts to be observed are, whether the fusion is accompanied with effervescence, or whether it takes place tranquilly; to examine the colour of the glass when obtained, and the changes it undergoes according as it is acted on by the oxidizing or reducing flame, and also to observe whether any changes take place either in the colour or transparency of the glass as it cools.

The phosphor salt, to use the term by which it is usually designated in works on this subject, is a double salt of phosphoric acid, ammonia, and soda. It is best prepared, according to Berzelius, by adding to a solution of 16 parts of chlorate of ammonia in a small quantity of boiling water 100 parts of crystallized phosphate of soda: this latter must then be brought also to a state of solution over the fire, after which the solution must be immediately filtered, and then be allowed to cool slowly, when the double salt will be deposited as crystals. It may be considered as pure if the crystals when fused give a glass, which does not become opaque on cooling. The object of this salt is to enable us to try the action of a free and strong acid on the assay, which is best obtained by this means, as on heating the ammonia is driven off, and the acid with which it was combined is then at liberty to exercise its influence on the body tested. It is therefore a powerful agent in proving the presence of the metallic oxides, with which it frequently forms characteristic coloured salts: and it is also a good test for determining the presence of silica in minerals, the phosphoric acid depriving it of the bases with which it was combined, and presenting it in the form of a gelatinous substance.

It now only remains once more to call the attention of all our readers, who may be in any way engaged in any manufacture dependent on the applications of chemistry, to the great advantages to be derived from the possession of some skill in the use of this little instrument. For instance, of what advantage would it be to the apothecary, in enabling him, at the cost of a few minutes, to prove the absence of impurities in the medicines he purchases—to the chemical manufacturer, to the dyer, the miner, the assayer. Nor are there any difficulties arising from the size or expense of the necessary apparatus; all that is most commonly necessary might be conveniently carried in the pocket. Nor is the requisite knowledge difficult of acquirement; nor need the individual, in order to be able to employ this instrument in a manner practically useful to himself, be a scientific chemist: it is one thing to be able to apply a particular part of a science, another to extend it by discoveries.

BLUBBER. [See WHALE-FISHERY.]

BLÜCHER, LEBRECHT VON, prince of Wahlstatt, field-marshal of the king of Prussia, was born Dec. 16th, 1742, at Rostock, a town near the shore of the Baltic, in the duchy of Mecklenburgh Schwerin. His father was a captain of cavalry in the service of Hesse Cassel. At an early age he manifested a strong predilection for the military profession: and, in opposition to the advice of his relatives, entered, in his fourteenth year, a regiment of Swedish

hussars as ensign. In a campaign against the Prussians, at the commencement of the Seven years' war, in which the Swedes were allied with Russia and Austria against Frederic the Great, he was taken prisoner in Pomerania by the same regiment of Prussian hussars in which he afterwards became so distinguished. The colonel of the regiment, Von Belling, being favourably impressed with his frank and gallant character, persuaded him to join the Prussian army, and contrived to give in exchange for him another Swedish officer. In the service of Frederic he rose from a lieutenant to senior-captain, when his pride being ruffled by the promotion of a person of higher birth than himself to the vacant post of major, and finding no use in remonstrance, he caused a request for leave to resign to be delivered to his royal master—that singular personage, to whom in stoical endurance of hardships and energy of character he was so remarkably similar. The reply of the king was—'Captain Blücher has permission to quit my service, and may go to the devil if he thinks fit.' Upon receiving this unexpected incivility he retired to the duchy of Silesia, became a farmer, and by persevering assiduity acquired possession of a considerable estate. He remained thus employed for fifteen years, until the accession, in 1786, of Frederic William II., by whom he was courteously recalled, and again introduced in the rank of major to his old regiment of black hussars, which he commanded with honourable distinction in several campaigns against the French.

In 1789 he obtained the Order of Merit; and subsequently in 1793-4, as colonel and major-general, at the battles of Orchies, Luxemburg, Frankenstein, Oppenheim, Kirchweiller, and Edesheim in the palatinate, he acquired reputation as a soldier by his vigilance, promptitude, and astonishing energy. In the name of the king of Prussia he took possession in 1802 of Erfurt and Mühlhausen. In the same year, after the victory gained by the French at Jena, having, with a remnant of 10,000 or 12,000 Prussians, become separated from the rest, he succeeded without disorder in forcing his retreat westward as far as Lubeck, and, though harassed by the forces of the marshals Soult, Marat, and Bernadotte, he resisted to the last, and finally accepted a capitulation only on condition that the cause of surrender should in writing be stated to be 'want of ammunition and provisions.' Whilst a prisoner of war he was treated by Napoleon with a courteous politeness, for which the motive could not be misunderstood; but the name of Blücher never appeared among those Prussian officers who consented to serve the emperor in his projects against Russia. Having been exchanged for General Victor, he was sent into Pomerania to assist the Swedes. He was afterwards employed in the war department at Königsberg and Berlin; and when in 1813 his country rose in opposition to France, he was appointed to take the command of a numerous army of Prussians and Russians combined. The order of St. George was bestowed upon him by the Emperor Alexander in acknowledgment of his conduct at the battle of Lützen; at those also of Bautzen and Haynau he was no less conspicuous. In the battle fought August 26th, 1813, on the banks of a small river near Liegnitz in Silesia, called the Katzbach, Blücher first held undivided command; and with 60,000 men, the largest portion but raw militia, defeated the French marshals Macdonald, Ney, Lauriston, and Sebastiani. In consequence of a heavy rain during the four previous days, a great number of muskets were not useable; the infantry were therefore brought hand to hand with the bayonet: a hideous slaughter ensued, and the army of Blücher gained the first great victory of that eventful campaign by a furious attack that precipitated the French by thousands into the flooded river. The general's proclamation upon this occasion exhibits his characteristic fervour and laconic eloquence:—'Silesia is delivered! audaciously the enemy came upon you—brave soldiers! swift as the lightning you rushed upon them—your bayonets have plunged them headlong into the Katzbach—you have 18,000 prisoners and all their baggage—offer thanks to the God of Armies.' He now marched with amazing rapidity to the Elbe, passed over by means of pontoons, and pushed on to the important battle of Leipzig, to the victorious results of which his services greatly contributed. With his Russo-Prussian troops he now formed the left wing of the great army of the allies in their pursuit of Napoleon retreating towards France. Having passed over the Rhine at Kaub and Coblenz, he took possession of Nancy in January, 1814. At Brienne he received a fierce attack

from Napoleon; but, though repulsed with great loss, returned to the combat, as usual, on the following day, and succeeded in getting some advantage. The rash and reckless rapidity of his movements at this time having obliged him to make a retreat, and exposed his army to disasters which prudence might have avoided, an alarm began to arise in England about the final result of the contest; when, after various battles lost and won on the way to Paris, he finally entered that metropolis, March 31, 1814; and, but for the intervention of the other commanders, it would, by him, have been made a scene of revengeful retribution. Among his less extravagant demands, he firmly insisted upon the restitution of every picture and work of art which had been plundered from Prussia to adorn the Louvre. As field-marshal and prince of Wahlstadt he accompanied the allied sovereigns to England, where his personal appearance excited intense curiosity. All the most illustrious military orders of Europe having already been conferred upon him, the king of Prussia created for him a new one, with the badge of a cross of iron, in compliment to his invincible courage. The Prince Regent of England gave him his portrait; and the university of Oxford, not to be deficient in proof of admiration, bestowed upon the veteran warrior the academical degree of LL.D. In possession of these honours he retired to his Silesian estate, residing there until the return of Napoleon from Elba in 1815, when again he returned to the great theatre of war, and assumed the command of the Prussian army in Belgium. His characteristic over-confidence and precipitancy occasioned his defeat at the battle of Ligny, June 16th. It was at the close of this desperate engagement, in which the fighting continued until ten at night, that his horse was shot dead, and fell upon him, so that he lay in that position unable to move, whilst several regiments of French cuirassiers passed over him in charging his troops. A report of his death was soon in circulation; and Napoleon, who commonly named him *le vieux diable* (the old devil), made the most of it in cheering the hopes of his soldiers in the struggle at Waterloo on the 18th. But late in the evening of that memorable day, when victory seemed to hang doubtful, Prince Blücher, who on the night of his accident had, owing to the darkness, escaped unhurt, appeared suddenly emerging from the forest of Frichefont at the head of a great portion of his Prussian army. At first Napoleon took it for the French division of Marshal Grouchy arriving from Wavre; that illusion however was quickly dispelled, and a simultaneous panic having seized upon the whole of the French forces and produced the utmost confusion, a general attack was ordered by the Duke of Wellington, which at once terminated in their perfect defeat. Blücher, although his troops had been marching all day, immediately gave orders to pursue the flying enemy; and the moon being bright, a fierce and hot pursuit by sixteen regiments of Prussians was kept up the whole night, until the roads were choked with the dying and the dead. Having arrived with his army at Paris, and assisted in the reinstatement of the Bourbon dynasty, he remained there several months, very frequently attending the tables for rouge et noir. When the Prussians returned to Germany, Blücher, on the anniversary of the battle of Katzbach, paid a visit to Rostock, his native place, where all the inhabitants united to raise a public monument to his fame: those of Berlin presented to him a medal with a representation of the angel Raphael trampling upon a dragon. His health now beginning to decline, he finally retired to his chateau of Kribowitz in Silesia, where the king of Prussia visited and took leave of him in his latest moments. 'I know I shall die,' said the old general; 'I am not sorry for it, because I can be no longer of any use.' Having requested that he might be buried without any parade, in a neighbouring field by the roadside, under three linden trees, he died on the 12th of September, 1819, aged 77. The whole army went into mourning for eight days. He had been in the service of Prussia during forty-five years, and at the battle of Waterloo was at the age of 73. In the year 1826 his statue in bronze, twelve feet in height, modelled by the sculptor Rauch, was erected in Berlin. The merit of Blücher lay nearly altogether in his fearless courage and his personal advantages: as a prudent, scientific, general he has no claims at all to distinction. With a piercing eye, a loud and sonorous voice, a bold outline of figure, accoutred and armed as a cossack, and a masterly style of manœuvring his horse, his presence, as he rode in front of his men, never failed to inspire them with hope of

success in following a captain so daring and full of energy. The astonishing celerity of his movements got him the appellation of Marshal Forwards, by which he was generally known in Germany and Russia; but equally well known was the fact, that to the able plans of General Gneisenau, one of his officers, he owed almost all his success.

BLUE, as a pigment. The substances used for this purpose are of very different natures, and derived from various sources: they are all compound bodies, some are natural and others artificial. They are derived almost entirely from the vegetable and mineral kingdoms, though the first which we shall describe is partly prepared from animal matter, viz. :—

Prussian Blue.—This beautiful pigment was discovered by accident in 1710 by Diesbach, a manufacturer of Berlin; but the method of preparing it was first described by Woodward in the Philosophical Transactions of 1724. The first step in the operation is to calcine a mixture of potash or its carbonate, with animal matter that contains azote, as blood, hoofs, or horns, in an iron vessel, till it ceases to burn with flame. The residual matter is then suffered to cool, the soluble portion of it dissolved in water, and the solution when sufficiently concentrated yields fine yellow crystals on cooling. This salt was formerly called phlogisticated alkali, and triple prussiate of potash: according to Berzelius it is a double cyanide of potassium and iron, consisting of

Cyanide of potassium	.	.	62.
" iron	.	.	25.3
Water	.	.	12.7
			100.

When a solution of this salt is poured into one of protosulphate of iron a perfectly white precipitate is formed, provided no persulphate be present; but if there is, then the precipitate is of a bluish gray colour; in both cases it becomes, by exposure to the air, of a fine blue, and is then washed and dried for use. In this precipitation and by a complicated play of affinities the potassium is replaced by iron, and the Prussian blue procured consists of nearly

Cyanogen	.	.	59.3
Iron	.	.	40.7
			100.

Very commonly the solution of cyanide of potassium and iron, procured from the residue of the calcination, is not put to crystallize, but is added at once to the solution of sulphate of iron. In this case, on account of the excess of potash which it contains, a portion of iron in a state of oxide is precipitated uncombined with the colouring matter; in order to prevent this from injuring the colour of the pigment, either dilute sulphuric acid is added, which dissolves it without acting on the Prussian blue; or alum is mixed with the sulphate of iron, and the uncombined potash uniting with its sulphuric acid, alumina is precipitated instead of oxide of iron, which merely dilutes without otherwise injuring the colour of the product. When a solution of a persalt of iron, such as the nitrate, is used, the precipitate is immediately obtained of a fine blue; but this process does not answer in manufacturing.

Prussian blue is inodorous, tasteless, insoluble in water, alcohol, æther, and oils. It is hygrometric, attracting water strongly from the air, which it retains until heated to nearly 290°. Diluted acids do not act upon this substance, but strong sulphuric acid dissolves it, forming a white compound similar to that of starch and water in appearance. On the addition of water the blue colour is restored. Nitric acid and muriatic acid, when concentrated, both decompose it, and the same effect is produced by the alkalis and alkaline earths, but with different results. It is also decomposed by a strong heat. Prussian blue is employed both as a water colour and in oil; in the latter case, on account of the deficiency of what is termed *body*, it is usually mixed with white lead, and it will bear admixture with a large portion of this on account of the intensity of its colour. Its stability is very considerable, and it is not only used as a pigment but also as a dye. According to Berzelius it was used in Sweden instead of smalt, to give writing-paper a blue tint, but the paper was found to acquire a disagreeable greenish hue.

Indigo.—This fine blue is extracted from different species of *indigofera* in the East Indies and Guatmala in South America, of which the latter is most esteemed. For the

methods of procuring the colour from the plant and the various substances with which it is mixed, we refer to the article **INDIGO**, here merely stating the properties of the blue pigment usually met with by that name in small cubic pieces. The colour is extremely deep, the fracture is earthy, but becomes brilliant and of a copper red colour when rubbed by a hard body, and according to the degree to which this effect is produced, the better is the indigo reckoned. Even in this state however it is mixed with some foreign matters, which may generally be separated by water, alcohol, solution of potash and dilute acid, in all of which pure indigo is insoluble. It may also be purified by sublimation, but the process is difficult of management, for if the heat be rather greater than necessary the indigo is decomposed. Another method of procuring pure indigo is to take the solution of indigo prepared by dyers, and agitate it in contact with atmospheric air. This solution is prepared by mixing blue indigo in powder with lime and a solution of protosulphate of iron; the lime decomposes the sulphate of iron, precipitating its protoxide; this acting upon the indigo takes oxygen from it, and then it is rendered colourless and also soluble in water by the action of the excess of lime; this solution when agitated with atmospheric air, the indigo regaining oxygen and colour, is precipitated, and when washed with a little dilute muriatic acid and dried, it is pure. Indigo, except when used as a water-colour, requires white lead to give it body; it is a colour of considerable permanency. Strong nitric acid decomposes it, but it differs from most vegetable products, and especially vegetable colours, in being perfectly soluble and without decomposition in concentrated sulphuric acid. The colour is most intense, and this solution is employed in dyeing what is called Saxon blue. Chemists are not agreed as to the exact nature of this solution. Chlorine immediately destroys the colour of indigo.

Blue Verditer.—This pigment is used as a water-colour, and chiefly in the manufacture of paper-hangings. It is a gritty powder of a very fine light blue. It is a carbonate of copper, composed of nearly

Peroxide of copper	.	.	70.
Carbonic acid	.	.	25.4
Water	.	.	4.6
			100.0

It is prepared by precipitation from the solution of nitrate of copper which results from the refining of silver by precipitating the silver by copper. The exact mode of operating is not generally known, and success probably depends upon some minute circumstance in the manipulation.

This colour is readily acted upon by the acids even in their dilute state; they evolve its carbonic acid, and dissolve the peroxide of copper; the alkalis, potash and soda, and lime water, combine with the carbonic acid, and separate peroxide of copper; it is blackened by sulphuretted hydrogen, and it is decomposed at a high temperature.

Ultra-marine.—This splendid and permanent blue pigment was originally, and indeed until within a few years exclusively, prepared from a mineral called Azure Stone, or Lapis Lazuli, the finest kinds of which are brought from China, Persia, and Great Bucharia. In the 89th vol. of the *Annales de Chimie*, M. Tassaert has noticed the accidental formation of ultra-marine in a furnace used for the manufacture of soda; and about the year 1828, M. Gmelin of Tübingen, and M. Guimet of Lyons, both succeeded in forming this colour artificially, and it is now prepared in large quantity, of quality equal to the natural product. The former of these chemists has given the following process for making this pigment, and he asserts that it will infallibly succeed:—Prepare hydrate of silica and alumina, the first by fusing powdered quartz with four times its weight of carbonate of potash, dissolving the fused mass in water and precipitating the silica by muriatic acid; the second by decomposing a solution of alum with ammonia. Wash these two earths carefully with boiling water; and by drying portions of the moist precipitates, ascertain the quantity of dry earths which they contain. Then dissolve as much of the hydrate of silica as a solution of soda will take up, and determine the quantity. Lastly, for 72 parts of anhydrous silica take 70 parts of dry alumina, add them to the alkaline solution of silica, and evaporate, constantly stirring till the residue is nearly dry: this is the basis of the colour.

Put into a Hessian crucible, which has a cover that fits closely, a mixture of two parts of sulphur and one part of an-

hydrous carbonate of soda; cover and heat the mixture moderately till it fuses; then gradually throw in small portions of the mixture above described, waiting till the effervescence is over before a fresh portion is added. Keep the mixture at a moderate red heat for an hour. If there be an excess of sulphur it is to be expelled by a moderate heat, and if all parts should not be equally coloured, the finer portions after powdering may be separated by washing with water. *Annales de Chimie et de Physique*, 37. 409. According to the author of this process, sulphuret of sodium is the colouring principle of the lapis lazuli, and of course of the artificial as well as the natural ultramarine.

This pigment loses its colour totally by being put into an acid, and although there is no perceptible effervescence, a slight smell of sulphuretted hydrogen gas is recognised; the residue is of a dirty white colour; the alkalis do not act upon this colour, nor is it destroyed by exposure to a red heat.

It has hitherto, on account of its high price, been used almost exclusively by artists, both as a water-colour and in oil; but on account of the reduced charge at which it will probably be hereafter obtained, it will doubtless be rendered much more extensively useful.

Cobalt Blue.—This was proposed as a substitute for ultramarine before the invention above described had rendered this latter colour easily obtainable at a moderate price. According to Thenard (*Traité de Chimie*, tome i.) this pigment, the base of which is either a phosphate or arseniate of cobalt, is prepared by adding a solution of phosphate of soda to one of nitrate of cobalt; the precipitated phosphate of cobalt, after due washing, is to be mixed with moist hydrate of alumina, the proportions being one of the phosphate to eight parts of the hydrate; or half the quantity of arseniate of cobalt may be substituted for the phosphate.

These substances are to be thoroughly mixed and then dried in a stove, and when the mass has become brittle it is to be calcined in a covered crucible at a cherry-red heat for half an hour.

This colour is one of great permanence, but is not so fine as the ultramarine, and will hereafter be probably little employed.

Small is a blue colour also prepared from cobalt, but is generally used rather to diminish the yellow tint of writing paper and of linen, and to give a bluish colour to starch, than strictly speaking as a pigment; it is merely glass rendered blue by oxide of cobalt, and this when reduced to a very fine powder is commonly called *powder-blue*. [See COBALT.]

BLUE-BIRD (zoology), the American name for the *Motacilla sialis* of Linnæus, *Sylvia sialis* of Wilson, *Saxicola sialis* of Bonaparte, *Ampelis sialis* of Nuttall, and *Erythaca (sialia) Wilsonii* of Swainson.



[Blue-bird.]

Like our red-breast, this harbinger of spring to the Americans 'is known to almost every child, and shews,' says

Wilson, 'as much confidence in man by associating with him in summer, as the other by his familiarity in winter.'

'So early as the middle of February, if the weather be open, he usually makes his appearance about his old haunts, the barn, orchard, and fence-posts. Storms and deep snows sometimes succeeding, he disappears for a time; but about the middle of March is again seen accompanied by his mate, visiting the box in the garden, or the hole in the old apple-tree, the cradle of some generations of his ancestors.'

'When he first begins his amours,' says a curious and correct observer, 'it is pleasing to behold his courtship, his solicitude to please and to secure the favour of his beloved female. He uses the tenderest expressions, sits close by her, caresses and sings to her his most endearing warblings. When seated together, if he spies an insect delicious to her taste, he takes it up, flies with it to her, spreads his wing over her, and puts it in her mouth.'

The food of the blue-bird consists principally of insects, particularly large beetles and other *coleoptera*, frequently of spiders, and sometimes of fruits and seeds.

The nest is built in holes in trees and similar situations. The bird is very prolific, for though the eggs, which are of a pale-blue colour, seldom exceed six, and are more frequently five in number, two and sometimes three broods are produced in a season.

Its song is cheerful, continuing with little interruption from March to October, but is most frequently heard in the serene days of the spring.

With regard to its geographical distribution, Catesby says, 'These birds are common in most parts of North America; for I have seen them in Carolina, Virginia, Maryland, and the Bermuda Islands.' Wilson gives the United States, the Bahamas, Mexico, Brazil, and Guiana, as its localities.

About November it takes its departure from the United States. The whole upper part of the bird, which is about seven inches and a half long, is of a rich sky-blue shot with purple. The bill and legs are black. Shafts of the wing and tail, feathers black. Throat, neck, breast, and sides, partially under the wings, reddish chestnut. Wings dusky black at the tips. Belly and vent white. The female is duller in its colours.

It is said to be much infested with tape-worms.

This bird must not be confounded with the *Arctic Blue-bird* (*Erythaca Arctica*, Swainson, *Sialia Arctica*, Nuttall), another species of Swainson's subgenus *Sialia*. The latter has no red or chestnut about it, the colours being ultramarine-blue above, greenish-blue beneath, and whitish on the posterior part of the belly and under tail-coverts. The specimen figured in the *Fauna Boreali-Americana* was shot at Fort Franklin in July, 1825.

Swainson mentions another species, his *Sialia Mexicana*, from the Table-land of Mexico.

BLUE-BOTTLE, a pretty wild flower, commonly found in corn-fields. It is the *Centaurea cyanus* of botanists.

BLUE-BREAST (zoology), the English name for the pretty bird, which, as Bechstein observes, may be considered



[Blue-breast.]

as the link between the redstart and common wagtail, having strong points of resemblance to both. It is the *Gorge-bleue* of the French, the *Blaukehlein* of the Germans, *Petto turchino* of the Italians, the *Cyanecula* of Brisson, *Motacilla Suescica* of Linnæus, *Sylvia cyanecula* of Meyer, the *Blue-throated warbler* and *Sylvia Suescica* of Latham.

According to Temminck, the blue-breast is found in the same countries which are inhabited by the red-breast, and particularly on the borders of forests, but is more rare in France and Holland than the latter bird. Bonaparte notes it as accidental and very rare in the neighbourhood of Rome, and as only appearing in severe winters. Bechstein says, 'I often hear it said that the blue breast is a rare bird; that in some parts of Germany it appears only every five or even ten years, but I can declare that this opinion arises from a want of observation. Since I have taught my neighbours to be more attentive to the time of their passage, they every year catch as many as they please. If in the first fortnight of April, up to the 20th, cold and snow return, plenty may be found by merely following the streams, rivers, and ponds, especially in the neighbourhood of a wood.'

In England it is very rarely seen.

The food of the blue-breast, according to Temminck, consists of flies, the larvæ of insects, and worms. Bechstein says that it also eats elderberries. It is one of those unfortunate birds which is called by some a Beccafico. The nest is said to be built in bushes and in the holes of trees. The eggs, of a greenish-blue, are six in number.

The following is Bechstein's accurate description of the male:—Its length is five inches and a half, of which the tail occupies two and a quarter. The beak is sharp and blackish, yellow at the angles; the iris is brown; the shanks are fourteen lines high, of a reddish-brown, and the toes blackish; the head, the back, and the wing-coverts are ashy-brown, mottled with a darker tint; a reddish-white line passes above the eyes; the cheeks are dark-brown, spotted with rust-red, and edged at the side with deep ash-grey; a brilliant sky-blue covers the throat and half-way down the breast; this is set off by a spot of the most dazzling white, the size of a pea, placed precisely over the larynx, which, enlarging and diminishing successively by the movement of this part when the bird sings, produces the most beautiful effect. The blue passes into a black band, and the latter into a fine orange; the belly is dusky-white, yellowish towards the vent; the thighs and sides are reddish; the quill-feathers dark-brown; the tail-feathers red at the base, and half the summit black; the two intermediate ones are entirely dark-brown. Some males have two little white spots on the throat, some even have three, while others have none; these latter are probably very old, for I have observed that, as the bird grows older the blue deepens, and the orange band becomes almost maroon.'

Temminck describes the very old male as having a white streak above the eyes, followed by a black one; no white space on the throat, and some blueish-black between the eye and the beak; the red band of the breast much larger, and that, as well as the origin of the tail-feathers, of a more lively red.

The female resembles the male in the upper parts. On each side of the neck is a blackish longitudinal streak passing on the upper parts of the breast into a large blackish space tinged with ash-colour. On the middle of the neck is a great spot of pure white. Flanks clouded with olive, the rest of the lower parts white. The very old females have the throat sometimes of a very bright blue. This is probably a sign that they have done laying, and are putting on the plumage of the male. Bechstein says that the females, when young, are of a celestial blue tint on the sides of the throat, which deepens with age and forms the two longitudinal lines.

The young, according to Temminck, are brown spotted with white, and have all a large white space upon the throat. 'Its song,' says Bechstein, 'is very agreeable; it sounds like two voices at once; one deep, resembling the gentle humming of a violin string, the other the soft sound of a flute.'

BLUE MOUNTAINS, in Australia, may be considered as beginning at Bass's Strait with the rocks of Cape Wilson, and running in a north-eastern direction parallel to the shore as far as Cape Howe. We are not acquainted with the distance of the range from the sea in this part of the country. Opposite Cape Howe the mountain-chain changes

its direction and again extending parallel to the shore runs nearly due north, declining one or two points to the east, as far as the sources of the Murrumbidgee river, between 35° and 30° S. lat. In this tract the distance of the mountains from the sea seems to vary between seventy and eighty miles. To the south of the upper branches of the Murrumbidgee river the principal range of the mountains extends eastward and approaches the sea within forty miles or perhaps less; it then suddenly turns to the north, encloses Lake George, and continues north of it in the same direction under the name of Cullarin Range. At nearly an equal distance from 35° and 34° the chain again turns to the east and approaches the sea within forty or fifty miles. Running at this distance parallel to the shore (that is N.N.E.), it extends as far as 33° and perhaps a little to the north of it, where it again turns northward, and continues in that direction till it has passed the 32nd parallel and attained a distance of about 140 miles from the sea. Here it meets with another extensive chain, the Liverpool Range, which runs east and west and seems to be the southern part of a mountain system which extends over a greater space than the Blue Mountains, in the direction from west to east, and whose continuation northward is not farther known. It is possible that it continues up to Cape York, the north-eastern cape of Australia on Torres Strait.

The highest part of this mountain-range is the Warra-gong Mountains, between 36° and 35°, whose peaks being covered with perpetual snow, have received the name of the Australian Alps. But the chain extending from these alps to the Liverpool Range, which is more properly called the Blue Mountains, does not attain a very great elevation. Its average height may be 3000 feet, and though doubtless several of its summits approach 4000 feet, it does not seem that any of them exceed that height. These mountains are difficult to be crossed on account of the steep rocks which crown the upper part of the chain, and which are only broken by narrow and deep ravines. Twenty-five years elapsed after the foundation of the colony of Port Jackson before our countrymen succeeded in passing over these mountains. The Liverpool Range attains a much greater height, its summits rising to 6500 feet above the sea; but the passes can be traversed with greater ease.

The country between the Blue Mountains and the sea is partly filled with its lower branches, and partly with sandy plains between them and the sea. In some places the hills come down to the very shores, as at Illawarra and Newcastle; at other places they terminate at a distance of thirty miles and upwards from the sea. On the western side the mountains are less steep, and descend in terraces of considerable extent till they terminate in the low plains which occupy the interior of Australia.

In order to go from the coast to these plains, the mountains of course must be passed. Up to the present time this has been effected at two places only. One of the mountain passes lies a little to the north of the parallel of Sydney, and a carriage-road has been made through it. It begins on the banks of the Nepean River, the principal branch of Hawkesbury River, at Emu Ford, and ascending the steep Lapstone Hill continues rising to Spring-wood, twelve and a half miles distant from Emu Ford. Farther on to Weather-Board Hut, sixteen miles from Spring-wood, the ascent is not considerable. Weather-Board Hut is on Kingsland Table, 2727 feet above the sea. Hence the road passes through the vale of Clwdd, on the eastern side of Mount York, which vale is 2496 feet above the sea; Mount York rises to 3292 feet. From this vale the road skirts the southern declivity of Mount York and leads to Cox's Pass, on the banks of Cox's River, which pass is twenty-one miles distant from Weather-Board Hut, and may be regarded as the western extremity of the mountain pass: the remainder of the road to Bathurst leads over an undulating plain. Bathurst is 1970 feet above the sea, according to Oxler. This portion of the mountains is formed of sandstone, which extends to Mount York and even to Cox's River, where it is succeeded by granite, which afterwards at Molong, to the N.W. of Bathurst, gives way to a limestone formation with numerous caves, and at the junction of the Bell River with the Macquarie is superseded by freestone. But as the country falls rapidly from that point, the free-stone formation soon disappears and is succeeded by the flat country.

The second mountain pass lies farther to the south, near the 33th parallel, beginning at the point where the Wolondilly River turns to the north. It ascends along the course

of this river to Goulburn Plains, then passes through a narrow ridge to Bredalbans Plains, and again through another to Yass Plains, which extend on the other side of the range between Yass River and Morrumbidgee River.

This range is not rich in metals. Copper has been found near Bathurst, and tin and lead in some other places; but coal seems to be abundant, especially at Newcastle, towards the Hunter River. Besides, there is plenty of granite and whinstone, pipe and potter's clay, limestone, gypsum or plaster of Paris, and alum. (Oxley; Sturt; P. Cunningham; Society's Map.)

BLUE RIDGE. [See APPALACHIAN MOUNTAINS.]

BLUNDELL MUSEUM, an assemblage of choice specimens of sculpture, consisting of statues, busts, bas-reliefs, sarcophagi, cinerary urns, and other ancient marbles, collected by the late Henry Blundell, Esq., and preserved at his seat at Ince-Blundell in the parish of Sefton in Lancashire, about nine miles north of Liverpool. A large portion are placed in a building attached to the mansion called the Pantheon, exactly resembling the edifice of that name in Rome, though one-third less in lineal dimensions, erected for the purpose of containing them; a few modern sculptures are also in this collection, among which a Psyche by Canova is the most valuable.

Two folio volumes of 'Engravings and Etchings,' from the principal of these marbles, were prepared by Mr. Blundell for distribution among his friends in 1809: some of these had been made at Rome, before the marbles left that city, and others were executed in London. Mr. Blundell was in Italy at the same time with his friend Mr. Charles Townley, and not only collected with a kindred taste, but was frequently guided in his choice of purchases by Mr. Townley's advice.

Among the statues of highest character in the Blundell Museum are—1. A Minerva found at Ostia, for many years in the Lanti palace, and afterwards the property of Mr. Jenkins, from whom it was bought; larger than life. 2. Diana, found in the ruins of the Emperor Gordian's villa; the full size of life: bought of the sculptor Albacini. 3. Theseus, seven feet two inches high; found in Hadrian's villa: purchased from the Duke of Modena, in the centre of the saloon at whose villa at Tivoli it stood. 4. Æsculapius, from the Villa Mattei, nearly seven feet high. 5. A consular figure, in good preservation, nearly resembling that called Cicero in the Arundelian Collection at Oxford; this also was bought from the Prince Mattei. 6. Another Minerva, seven feet high, which formerly belonged to Pope Sixtus V.; bought out of the Negroni collection. 7. A statue representing the province Bithynia, bought out of the Villa D'Este from the Duke of Modena. 8. Faustina, the wife of Marcus Aurelius; the head, feet, and hands of Parian marble; the drapery in Lesbian marble, a kind of opaque basalt. 9. A group of two statues, an old faun and an hermaphrodite, the work of Bupalus, whose name is upon the plinth; it was found by Niccola la Piccola in an excavation on the Præneste road, 1776; small life, about three feet high. Among the busts are those of Septimius Severus and Otho, both bought out of the Mattei Villa; Augustus and Marciana, found at Ostia; and Ælius Cæsar, the adopted heir of Hadrian, which was also purchased from the Prince Mattei. Among the miscellaneous marbles of this collection are three tragic masks of rare and unusual size; two from the Villa Negroni, three feet each in height; the third from the Altieri Villa. Some idea may be formed of the extent of this collection from the fact that it consists of near 100 statues, 150 busts, above 100 bas-reliefs, 90 sarcophagi and cinerary urns, besides stelæ, and other miscellaneous antiquities.

(See the *Beauties of England and Wales*, vol. ix. Lancashire, pp. 308, 309; the *Engravings and Etchings* already quoted; and Dallaway's *Anecdotes of the Arts*, 8vo. 1800.)

BLUNDERBUSS. [See ARMS.]

BLYTH, or SOUTH BLYTH, or BLYTH NOOK, a small seaport town in the county of Northumberland, partly in the parish of Horton, but chiefly in that of Earsdon, and in the east division of Castle ward, distant from London 257 miles, N. by W., and from Newcastle 12 miles N. by E. It derives its name from its situation on the south side of the river Blyth, at its confluence with the German Ocean. The town owes its origin and prosperity to its commodious and safe haven for small vessels. The navigable river and port of Blyth are mentioned as of con-

sequence to the bishops of Durham in former times, and are named in their records with the Tyne, Wear, and Tees, as being subject to their jurisdiction. The prelates of that diocese still have jurisdiction over the river and the wastes between high and low water marks. The river Blyth rises about twenty-five miles inland, and its general course is east by north, from which it makes one great bend to the north after it has passed Stamfordham. On resuming its general course it receives its largest tributary from the north-west, after which it goes on nearly in the same direction for about nine miles, when it receives another stream from the north-west, after which it inclines to the south-east, and enters the ocean, after a total course of about thirty-seven miles. The Blyth abounds with sea fish near its mouth; and those fresh-water fish that frequent the higher parts of the stream are of very fine quality. The shore near its estuary affords abundance of muscles, which are used for bait by the fishermen of the neighbouring places.

Blyth harbour is so safe that an instance rarely occurs of a vessel sustaining damage in entering it in the most tempestuous weather. In full tides there are ten feet of water on the bar; when there are only eight feet, stationary lights are exhibited in the harbour. The tide flows up to the dam at the Bedlington iron-works, four miles and a half from the mouth of the river. The place was of very trifling consequence previously to the Restoration, when it appears to have contained scarcely any houses. It must after that have rapidly increased, as we find that in 1728 not fewer than 200 vessels are entered in the custom-house books as having sailed from this port. Its trade would seem to have declined after this: towards the latter part of the last century there were only a few small sloops belonging to the port; but the opening of the Cowpen colliery, near the end of the century, materially contributed to the increase of its trade, which consists chiefly in the export of coal and iron from Bedlington, and sometimes corn. Thirty or forty sail of laden vessels sometimes sail in one tide. They usually return in ballast; few articles are imported, except such timber and stores as are required for the shipping. About 100 vessels now belong to the port, which is regarded as a sort of creek to that of Newcastle.

Blyth is a pleasant and well built little place. It has a custom-house, subject to that of Newcastle; two ship insurance companies, and several dock-yards, in which vessels of 430 tons have been built. There is a neat chapel of ease, which was erected in 1751 by Sir M. W. Ridley, the proprietor of the estate; and to which a Sunday-school has since been annexed. Different denominations of dissenters have four places of worship at Blyth.

The township of South Blyth and Newsham contained 248 houses in 1831, when the population was 1769, of whom 977 were females. This however does not convey a true idea of the extent and population of the town, as it only comprehends that part of it which lies in the parish of Earsdon, but, adding to the account that part in the township of Cowpen, parish of Horton, the actual population must exceed 3000.

(Hutchinson's *View of Northumberland; Historical and Descriptive View of Northumberland, &c.*)

BOA (zoology), the name of a family of serpents which are without venom, the absence of which is amply compensated by immense muscular power, enabling some of the species to kill large animals by constriction, preparatory to swallowing them whole.

There are few fables which have not some truth for their origin. The voyages of Sinbad have become proverbial; but the stories of the monstrous serpents in the valley of diamonds, and of the 'serpent of surprising length and thickness, whose scales made a rustling as he wound himself along,' that swallowed up two of his companions, probably had their foundation in traditions of the size and strength of a family of serpents belonging to the old world, but nearly allied in their organization and habits to those which we are about to consider. Sinbad's description indeed of the fate of the first of the two victims brings to our memory a terrible anecdote of the murderous power and voracity of the Indian boas or pythons related in modern times, and recorded on canvas by Daniell. [See PYTHON.] 'It (the serpent) swallowed up,' says the fictitious sailor, 'one of my comrades, notwithstanding his loud cries and the efforts he made to extricate himself.'

Of the same race probably were the monsters to which the following allusions are made by ancient writers.

Aristotle (book viii. c. 28) writes of Libyan serpents of enormous size, and relates, that certain voyagers to that coast were pursued by some of them so large that they overset one of the triremes. The two monstrous snakes (*αἰὶδ ἰδύλαρα*) sent by Juno to strangle the infant Hercules in his cradle, described by Theocritus in his 24th Idyll, exhibit some of the peculiarities of these reptiles. The way in which Theocritus represents them to have rolled their folds around the boy, and relaxed them when dying in his grasp, indicates the habit of a constricting serpent*. Virgil's Læocœon, and the unrivalled marble group, which the poet's description most probably called into existence, owe their origin undoubtedly to the stories current of constricting serpents. Valerius Maximus (book i. c. 8, s. 19), quoting Livy, gives a relation of the alarm into which the Romans under Regulus were thrown by an enormous snake, which had its lair on the banks of the Bagradas, or Magradas (Mejerda), near Utica. It is said to have swallowed many of the soldiers, to have killed others in its folds, and to have kept the army from the river; till at length, being invulnerable by ordinary weapons, it was destroyed by heavy stones slung from the military engines used in sieges. But, according to the historian, its persecution of the army did not cease with its death; for the waters were polluted with its gore, and the air with the steams from its corrupted carcase, to such a degree, that the Romans were obliged to move their camp, taking with them however the skin, one hundred and twenty feet in length, which was sent to Rome†. Gellius, Orosius, Florus, Silius Italicus, and Zonaras, make mention of the same serpent nearly to the same effect. Pliny (viii. 14, *De Serpentiibus Maximis et Bois*) says, that Megasthenes writes that serpents grow to such a size in India, that they swallowed entire stags and bulls. (See also Nearchus, quoted by Arrian. *Indic.* 15.) He speaks too of the Bagradian serpent above-mentioned as matter of notoriety, observing that it was one hundred and twenty feet long, and that its skin and jaws were preserved in a temple at Rome till the time of the Numantine war: and he adds, that the serpents called Boas in Italy confirm this, for that they grow to such a size, that in the belly of one killed on the Vatican hill in the reign of Claudius an entire infant was found‡. Suetonius (in *Octav.* 43) mentions the exhibition of a serpent, fifty cubits in length, in front of the comitium. But, without multiplying instances from Ælian and others, we will now come to more modern accounts. Bontius (v. 23) says, 'The Indian serpents are so multitudinous, that my paper would fail me before I enumerated them all; nevertheless, I must say something about the great ones, which sometimes exceed thirty-six feet in length, and are of such capacity of throat and stomach that they swallow entire boars.' He then speaks of the great power of distention in the jaws, adding, 'To confirm this, there are those alive who partook with General Peter Both of a recently swallowed hog, cut out of the belly of a serpent of this kind. They are not venomous, but they strangle by powerfully applying their folds around the body of a man or other animal.' Mr. M'Leod, in his interesting 'Voyage of H. M. S. Alceste,' p. 312, gives the following account:

'It may here be mentioned, that during a captivity of some months at Whidah, in the kingdom of Dahomey, on the coast of Africa, the author of this narrative had opportunities of observing snakes more than double the size of this one just described§; but he cannot venture to say whether or not they were of the same species, though he has no doubt of their being of the genus Boa. They killed their prey, however, precisely in a similar manner; and, from their superior bulk, were capable of swallowing animals much larger than goats or sheep. Governor Abson, who had for thirty-seven years resided at Fort William (one of the African Company's settlements there), described some desperate struggles which he had either seen, or had come to his knowledge, between the snakes and wild beasts, as well as the smaller cattle, in which the former were

* The exquisite beauty of the Idyll can only be equalled by the grandeur of design and execution displayed by Reynolds in his picture.

† The passage cited by Valerius from Livy must have been in the lost decade (the 5th). The reader will find however the story recorded in the supplement to Livy (xviii. 15).

‡ Junston, after quoting this passage, adds, that it is probable that the Boa grows to this size in Calabria, for that Cuccinus, bishop of St. Angelo, writes to Thomasinus, that one which had devoured the flocks and herds was killed, in a field near the town and within his diocese, by a shepherd, and that the mandibles, two palms in length, were to be seen in the church of the Virgin. (*Deipara de Ursulo.*)

§ See Post, p. 23.

always victorious. A negro herdsman belonging to Mr. Abson (who afterwards limped for many years about the fort) had been seized by one of these monsters by the thigh; but from his situation in a wood, the serpent, in attempting to throw himself around him, got entangled with a tree; and the man, being thus preserved from a state of compression, which would instantly have rendered him quite powerless, had presence of mind enough to cut with a large knife, which he carried about with him, deep gashes in the neck and throat of his antagonist, thereby killing him, and disengaging himself from his frightful situation. He never afterwards, however, recovered the use of that limb, which had sustained considerable injury from his fangs and the mere force of his jaws. All these gigantic serpents were, most probably, the Pythons of modern nomenclature.

According to Pliny, the name Boa was given to these serpents because they were said to be at first nourished by the milk of cows; and Jonston and others observe, that they derived the name not so much from their power of swallowing oxen, as from a story current in old times of their following the herds and sucking their udders. Boa is also stated by some to be the Brazilian name for a serpent.

Among modern systematic writers, Linnæus may be considered as the first establisher of the genus. Laurenti, Boddaert, Daubenton, Schneider, Lacépède, Latreille, and others adopted it, in many instances with alterations and corrections. At one time the genus comprehended all serpents, venomous or not, the under part of whose body and tail were furnished with scaly transverse bands, or *scuta*, formed of one piece only, and which had neither spur nor rattle at the end of the tail. After the venomous serpents were separated from them, they were found sufficiently numerous and were again subdivided.

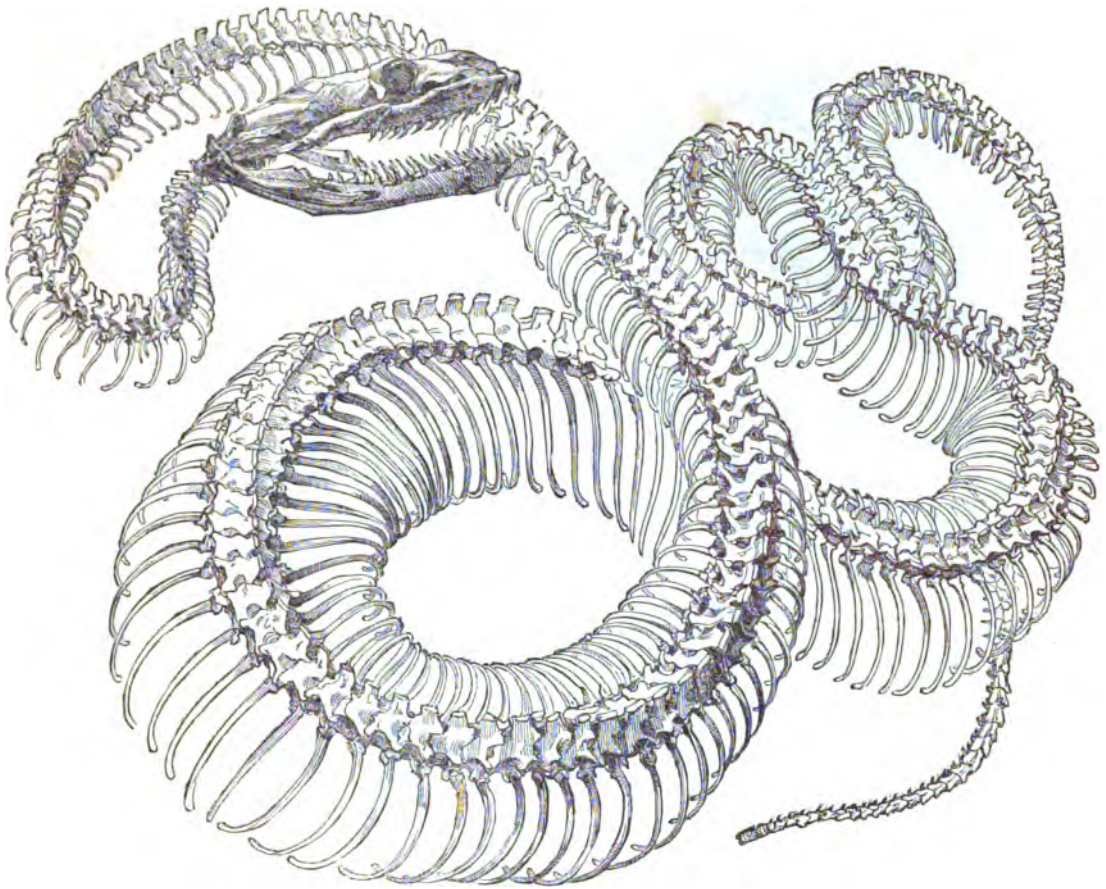
The following is Cuvier's definition of a true Boa in modern nomenclature:

The Boas more especially so called, have a spur on each side of the vent, the body compressed, largest in the middle, the tail prehensile, and small scales on the posterior part of the head. Among them are found the largest of serpents. Some of the species attain thirty or forty feet in length, and become capable of swallowing dogs, deer, and even oxen, according to travellers, after having crushed them in their folds, lubricated them with their saliva, and enormously dilated their jaws and throat: this operation is a very long one. A remarkable part of their anatomy is, that their smaller lung is only one half shorter than the other.

Before we enter upon the subdivision of this family, we will examine some of the most remarkable points in the structure and organization of the serpent, admirably adapted to its habits.

On looking at this representation of the skeleton of a boa constrictor, drawn from the beautiful preparation in the British Museum, we first observe the strong close-set teeth, of which there is a double row on each side of the upper jaw, all pointing backwards, and giving the serpent the firmest hold of its struggling victim, which is thus deprived of the power of withdrawing itself when once locked within the deadly jaws. Serpents do not masticate. The prey is swallowed whole; and to assist deglutition, their under jaw consists of two bones easily separable at the *symphysis*, or point of junction, while the bone similar to the *os quadratum* in birds, by the intervention of which it is fitted to the cranium, further facilitates the act. The upper jaw moreover is so constructed as to admit of considerable motion.

We next observe the spine, formed for the most extensive mobility, and the multitude of ribs constructed as organs of rapid progression, when joined to the belly scales, or scuta, with which the whole inferior surface of the body may be said to be shod. 'When the snake,' writes Sir Everard Home, 'begins to put itself in motion, the ribs on the opposite sides are drawn apart from each other, and the small cartilages at the end of them are bent upon the upper surfaces of the abdominal scuta, on which the ends of the ribs rest; and, as the ribs move in pairs, the scutum under each pair is carried along with it. This scutum by its posterior edge lays hold of the ground, and becomes a fixed point from whence to set out anew. This motion is beautifully seen when a snake is climbing over an angle to get upon a flat surface. When the animal is moving, it alters its shape from a circular or oval form to something approaching to a triangle, of which the surface on the ground forms the base. The coluber and boa having large abdominal scuta, which may be considered as hoofs or shoes, are



[Skeleton of boa constrictor.]

the best fitted for this kind of progressive motion.' (*Lectures on Comparative Anatomy*, vol. i.)

Sir Everard, in the same lecture, speaking of the ribs as organs of locomotion, says—'An observation of Sir Joseph Banks during the exhibition of a coluber of unusual size first led to this discovery. While it was moving briskly along the carpet, he said he thought he saw the ribs come forward in succession, like the feet of a caterpillar. This remark led me to examine the animal's motion with more accuracy, and on putting the hand under its belly, while the snake was in the act of passing over the palm, the ends of the ribs were distinctly felt pressing upon the surface in regular succession, so as to leave no doubt of the ribs forming so many pairs of levers, by which the animal moves its body from place to place.'

It is not intended to detract in the least from the masterly descriptions given in the lecture here quoted; but it is due to the sharp-sighted Tyson to observe, that the locomotive power of the ribs was detected and published by him in his excellent observations on the anatomy of the rattle-snake. (See *Phil. Trans.*)

Sir Everard Home informs us by what additional mechanism this faculty is effected. The ribs, he observes, are not articulated in snakes between the vertebræ, but each vertebra has a rib attached to it by two slightly concave surfaces, that move upon a convex protuberance on the side of the vertebra, by which means the extent of motion is unusually great, and the lower end of each vertebra having a globular form fitted to a concavity in the upper end of the vertebra below it, they move readily on one another in all directions. The muscles which bring the ribs forward, according to Sir Everard, consist of five sets, one from the transverse process of each vertebra to the rib immediately behind it, which rib is attached to the next vertebra. The next set goes from the rib a little way from the spine, just beyond where the former terminates, it passes over two ribs, sending a slip to each, and is inserted into the third; there is a slip also connecting it with the next muscle in succession. Under this is the third set, which arises from the posterior side of each rib, passes over two ribs, sending a lateral slip

to the next muscle, and is inserted into the third rib behind it. The fourth set passes from one rib over the next, and is inserted into the second rib. The fifth set goes from rib to rib. On the inside of the chest there is a strong set of muscles attached to the anterior surface of each vertebra, and passing obliquely forwards over four ribs to be inserted into the fifth, nearly at the middle part between the two extremities. From this part of each rib a strong flat muscle comes forward on each side before the viscera, forming the abdominal muscles, and uniting in a beautiful middle tendon, so that the lower half of each rib, which is beyond the origin of this muscle, and which is only laterally connected to it by loose cellular membrane, is external to the belly of the animal, and is used for the purpose of progressive motion; while that half of each rib next the spine, as far as the lungs extend, is employed in respiration. At the termination of each rib is a small cartilage, in shape corresponding to the rib, only tapering to the point. Those of the opposite ribs have no connexion, and when the ribs are drawn outwards by the muscles, they are separated to some distance, and rest through their whole length on the inner surface of the abdominal scuta, to which they are connected by a set of short muscles; they have also a connexion with the cartilages of the neighbouring ribs by a set of short straight muscles. These observations apply to snakes in general; but the muscles have been examined in a boa constrictor, three feet nine inches long, preserved in the Hunterian Museum. In all snakes, adds the author, the ribs are continued to the anus, but the lungs seldom occupy more than one half of the extent of the cavity covered by the ribs. Consequently these lower ribs can only be employed for the purpose of progressive motion, and therefore correspond in that respect with the ribs in the *Draco volans* superadded to form the wings. [See DRAGON.]

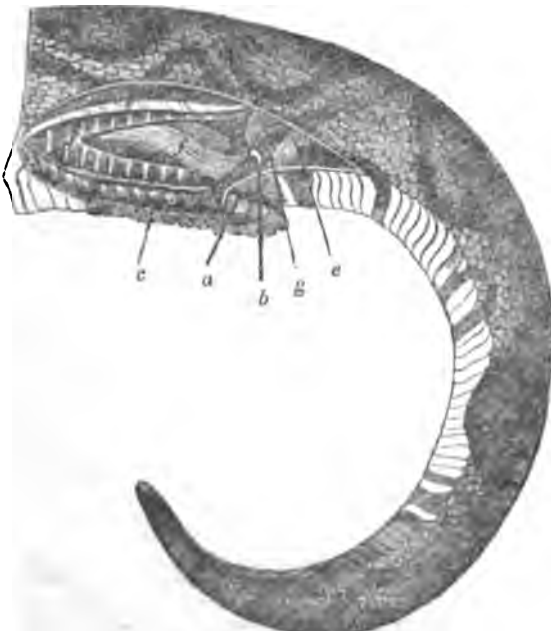
The subjoined cut, copied from that given as an illustration by Sir Everard Home, will explain the articulating surfaces of the vertebræ and ribs; and on the under surface of the former will be seen the protuberance for the attachment of the muscles which are employed in crushing the animals round which the snake entwines itself.



The cut exhibits two vertebrae, and portions of two ribs of a so-called boa constrictor, drawn with his usual accurate fidelity and skill by W. Clift, Esq., from a skeleton sent from the East Indies by the late Sir William Jones, and deposited in the Hunterian Museum. The letters *a, a* point to the protuberance on the under surface for the attachment of the constricting muscles, according to Sir Everard Home.

Though the term *boa constrictor* is used throughout by Sir Everard Home in his lecture, there can be little doubt that the serpent sent from India by Sir William Jones was a python. The small specimen from which the description of the organs employed in progressive motion was taken may have been a *boa*. But whether *boa* or *python*, it would have had the hooks or spurs near the vent, and the bones and muscles belonging to these spurs, which are of no small consequence in the organization of a *boa* or a *python*, rudiments of limbs though they be; these appear to have escaped Sir Everard Home's observation, occupied as he was in following out the mechanism of progressive motion.

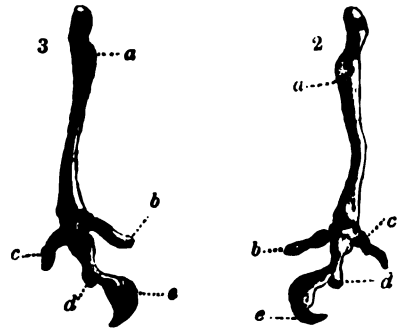
No one can read of the habits of these reptiles in a state of nature without perceiving the advantage which they gain when, holding on by their tails on a tree, their heads and bodies in ambush, and half floating on some sedgy river, they surprise the thirsty animal that seeks the stream. These hooks help the serpent to maintain a fixed point; they become a fulcrum which gives a double power to his energies. Dr. Mayer detected these rudiments of limbs, and has well explained their anatomy*. He makes *boa* the first genus of his family of *Phœnopoda* (*Ophidians* having the rudiments of a foot visible externally), adding the genera *Python*, *Eryx*, *Tortrix*. After adverting to what *Morrem*, *Schneider*, *Russel*, *Lacépède*, *Daudin*, *Oppel*, *Cuvier*, *Oken*, and *Blainville* have said or figured relative to these hooks



* Dr. Mayer's paper appeared in the *Trans. Soc. Nat. Curios.*; and was afterwards translated in the *Annales des Sciences* for 1826. But *Cuvier*, whose second edition of the *Regne Animal* was published in 1829, does not notice it.

or spurs, he proceeds to his own observations made on *Boa Constrictor*, *Scytale*, and *Cenchris*. He says, that the spur or nail on each side of the vent in the *boa constrictor* and other species of the genus is a true nail, in the cavity of which is a little demi-cartilaginous bone, or unguis phalanx, articulated with another bone much stronger which is concealed under the skin. This second bone of the rudiment of a foot in the *Boæ* has an external thick condyle, with which the unguis phalanx is articulated, as above stated: it presents, besides, a smaller internal apophysis, which places it in connexion with the other bones of the skeleton. These bones are the appendages of a tibia or leg bone, the form and relative position of which will be understood by a reference to the subjoined cuts, copied from Dr. Mayer's 'Memoir.'

The figure above given represents the tail of a *boa constrictor*: *a*, the vent; *b*, the hook or spur of the left side; *c*, the subcutaneous muscle; *d*, ribs and intercostal muscles; *e*, transverse muscle of the abdomen; *f*, bone of the leg enveloped in its muscles; *g*, abductor muscle of the foot; *h*, adductor muscle of the foot. The arrangement of the scuta, or shields, of one entire piece under the tail, characteristic of the true *boas*, will be here observed. In the pythons the shields beneath the tail are ranged in pairs.



We here have a representation of the osteology of this rudimentary limb, taken from the same author. Figure 2. represents the left posterior limb of the *Boa Scytale*, seen anteriorly: *a*, tibia or leg-bone; *b*, external bone of the tarsus; *c*, internal bone of the tarsus; *d*, bone of the metatarsus with its apophysis; *e*, nail or hook.

Figure 3 represents the same limb, seen posteriorly. Doctors *Hopkinson* and *Pancoast* have given in the 'Transactions of the American Philosophical Society,' held at Philadelphia, for promoting useful knowledge (vol. v. new series, part i.), an interesting account of the visceral anatomy of the *Python* (*Cuvier*), described by *Daudin* as the *Boa reticulata*. And here it may be as well to remark that the differences between the *Boæ* and the *Pythons* are so small, that the accounts given of the constricting powers and even of the principal anatomical details of the one, may be taken as illustrative of the same points in the history of the other. We select from the paper above mentioned an account of the respiratory and urinary organs, because their structure appears to be peculiarly adapted to the habits of the animal.

The larynx consists of a single cartilage, having a narrow oblique slit in it, about six lines in length, for the transmission of air; the trachea is one foot eight inches in length, and three-eighths of an inch in diameter, and passes down attached to the ventral face of the œsophagus. It consists of a great number of imperfect cartilaginous rings, interrupted posteriorly, but joined by an elastic substance which keeps their extremities in contact. Each ring is connected to the adjoining one by a membrane also elastic, so that when the trachea is stretched lengthwise, it will easily regain its former condition. It passes behind the heart, and while there concealed, divides into two bronchiæ, appropriated to the two lungs. The lungs, in a collapsed state, lie much concealed, being covered in part by the liver; but when inflated, are brought into view and cause the liver to be raised up. These organs consist in two distinct vesicles or bags, united above along their middle, but terminating below, each in a separate *cul de sac*. They differ materially in size, but vary less in this respect than those of snakes in general. The right lung is two feet ten inches long, and about four inches broad, and extends down as far as the gall-bladder; opposite the spleens,

which are on its left, it has a considerable contraction of its diameter. The smaller vesicle lies on the left side, and is loose at its lower end; it is only one foot nine inches long, and three inches broad; it terminates near the lower extremity of the liver. The lower four-fifths of each lung are thin, semi-transparent, and supplied with fewer blood-vessels than the upper portion. The parietes are marked by circular lines or striæ, along which are strung small white bodies, apparently vesicular, from half a line to two lines distant from each other; they are much more numerous above, and appear to be merely attached to the inner surface. The upper portion of each lung is composed of a more spongy structure; the parietes are much thicker, and present on their inner surface a loose reticulated texture, somewhat resembling a section of the *corpus cavernosum penis*, the cells however being much larger. A free passage is left through the centre, so that the air, in inspiration, is not obliged necessarily to pass through the cells, which seem to present merely a more extensive surface for the purposes of respiration. Both lungs contained many worms, found most abundant above among the cells, and even in the trachea; they were of various dimensions, being from one to three inches in length, whitish, cylindrical, tapering, and surrounded in their whole length by elevated rings or cords.

The authors of the foregoing description do not seem to have observed a part of the mechanism of the organs of respiration detected by Joseph Henry Green, Esq., F.R.S., &c. That gentleman, in his lectures at the Royal College of Surgeons, after alluding to Mr. Broderip's paper on the mode in which the boa constrictor takes its prey, and of the adaptation of its organization to its habits, hereinafter given, and especially that part where the author states that the larynx is, during the operation of swallowing, protruded beyond the edge of the dilated lower jaw, exhibited a drawing of two muscles which he had detected in the lower jaw for the purpose of bringing the larynx forward, in consequence of his attention having been drawn to the point by the statement made in the paper.

Without going into a detail of the anatomy of the other organs given by Drs. Hopkinson and Pancoast, it will be sufficient to remark that they detected a peculiarity of structure which suggests the idea that it is intended to obviate the injurious effects of an impeded circulation when the stomach is distended with food; a distention, from the habits of the animal, likely to be great and of long duration. Under such circumstances they remark that the peculiarly constructed vessels may, by a circuitous route, carry a large proportion of blood to the heart, which the vena cava alone would be unable to accomplish in a state of partial compression.

Having endeavoured to give the reader some insight into the organization of these serpents, we now proceed to lay before him descriptions by eye-witnesses of the manner in which that organization is brought into action for the purpose of killing and swallowing their prey.

Mr. M'Leod, in his 'Voyage of H.M.S. *Alceste*,' gives the following painfully vivid account of a serpent, a native of Borneo, sixteen feet long, and of about eighteen inches in circumference, which was on board. There were originally two; but one, to use Mr. M'Leod's expression, 'sprawled overboard and was drowned.'

'During his stay at Ryswick,' says Mr. M'Leod, speaking of the survivor, 'he is said to have been usually entertained with a goat for dinner, once in every three or four weeks, with occasionally a duck or a fowl by way of a dessert. The live-stock for his use during the passage, consisting of six goats of the ordinary size, were sent with him on board, five being considered as a fair allowance for as many months.'

'At an early period of the voyage we had an exhibition of his talent in the way of eating, which was publicly performed on the quarter-deck, upon which his crib stood. The sliding part being opened, one of the goats was thrust in, and the door of the cage was shut. The poor goat, as if instantly aware of all the horrors of its perilous situation, immediately began to utter the most piercing and distressing cries, butting instinctively, at the same time, with its head towards the serpent, in self-defence.'

'The snake, which at first appeared scarcely to notice the poor animal, soon began to stir a little, and, turning his head in the direction of the goat, he at length fixed a deadly and malignant eye on the trembling victim, whose agony and terror seemed to increase; for, previous to the snake seizing his prey, it shook in every limb, but still continuing

its unavailing show of attack, by butting at the serpent, which now became sufficiently animated to prepare for the banquet. The first operation was that of darting out his forked tongue, and at the same time rearing a little his head; then suddenly seizing the goat by the fore-leg with his fangs, and throwing it down, it was encircled in an instant in his horrid folds. So quick indeed and so instantaneous was the act, that it was impossible for the eye to follow the rapid convulsion of his elongated body. It was not a regular screw-like turn that was formed, but resembling rather a knot, one part of the body overlaying the other, as if to add weight to the muscular pressure, the more effectually to crush the object. During this time he continued to grasp with his fangs, though it appeared an unnecessary precaution, that part of the animal which he had first seized. He then slowly and cautiously unfolded himself, till the goat fell dead from his monstrous embrace, when he began to prepare himself for swallowing it. Placing his mouth in front of the dead animal, he commenced by lubricating with his saliva that part of the goat, and then taking its muzzle into his mouth, which had, and indeed always has, the appearance of a raw lacerated wound, he *sucked it in*, as far as the horns would allow. These protuberances opposed some little difficulty, not so much from their extent as from their points; however, they also in a very short time disappeared, that is to say, externally; but their progress was still to be traced very distinctly on the outside, threatening every moment to protrude through the skin. The victim had now descended as far as the shoulders; and it was an astonishing sight to observe the extraordinary action of the snake's muscles when stretched to such an unnatural extent—an extent which must have utterly destroyed all muscular power in any animal that was not, like himself, endowed with very peculiar faculties of expansion and action at the same time. When his head and neck had no other appearance than that of a serpent's skin stuffed almost to bursting, still the workings of the muscles were evident; and his power of suction, as it is erroneously called, unabated; it was, in fact, the effect of a contractile muscular power, assisted by two rows of strong hooked teeth. With all this he must be so formed as to be able to suspend for a time his respiration; for it is impossible to conceive that the process of breathing could be carried on while the mouth and throat were so completely stuffed and expanded by the body of the goat, and the lungs themselves (admitting the trachea to be ever so hard) compressed, as they must have been, by its passage downwards.

'The whole operation of completely gorging the goat occupied about two hours and twenty minutes, at the end of which time the tumefaction was confined to the middle part of the body, or stomach, the superior parts, which had been so much distended, having resumed their natural dimensions. He now coiled himself up again, and lay quietly in his usual torpid state for about three weeks or a month, when his last meal appearing to be completely digested and dissolved, he was presented with another goat, which he killed and devoured with equal facility. It would appear that almost all he swallows is converted into nutrition, for a small quantity of calcareous matter* (and that perhaps not a tenth part of the bones of the animal), with occasionally some of the hairs, seemed to compose his general fæces. . . .

'It was remarked, especially by the officers of the watch, who had better opportunities of noticing this circumstance, that the goats had always a great horror of the serpent, and evidently avoided that side of the deck on which his cage stood.' P. 305.

Mr. Broderip, in the second volume of the 'Zoological Journal,' after referring to Mr. M'Leod's interesting narrative, of the correctness of which, as far as it goes, he says he has not a single doubt, and observing that two points in that description struck him forcibly, the one as being contrary to the probable structure of the animal, and the other as being contrary to Mr. Broderip's observations, proceeds to give the following account of the manner in which the serpent † takes its prey in this country.

* This was most probably the urine of the animal, which is often voided in inspissated lumps, like moist plaster-of-Paris in appearance, and has been frequently taken for fæces. Dr. John Davy describes it in the Philosophical Transactions as of a butyrateous consistence, becoming hard like chalk by exposure to air, and as being a form of pure uric acid.

† The serpent whose actions are described by Mr. Broderip, and that which furnished Mr. M'Leod's narrative, were Indian boas or pythons. These have been commonly exhibited under the popular name of 'Boa constrictor,' and though, as we have already stated, there are points of difference in the arrangement of the scuta below the vent, &c., the general structure of the true South

Mr. Cops of the Lion Office in the Tower, writes Broderip, 'sent to inform me that one of these reptiles had just cast his skin, at which period they, in common with other serpents, are most active and eager for prey. Accordingly I repaired with some friends to the Tower, where we found a spacious cage, the floor of which consisted of a tin case covered with red baize and filled with warm water, so as to produce a proper temperature. There was the snake, "positis novus exuviis," gracefully examining the height and extent of his prison as he raised, without any apparent effort, his towering head to the roof and upper parts of it, full of life, and brandishing his tongue.

'A large buck rabbit was introduced into the cage. The snake was down and motionless in a moment. There he lay like a log without one symptom of life, save that which glared in the small bright eye twinkling in his depressed head. The rabbit appeared to take no notice of him, but presently began to walk about the cage. The snake suddenly, but almost imperceptibly, turned his head according to the rabbit's movements, as if to keep the object within the range of his eye. At length the rabbit, totally unconscious of his situation, approached the ambushed head. The snake dashed at him like lightning. There was a blow—a scream—and instantly the victim was locked in the coils of the serpent. This was done almost too rapidly for the eye to follow: at one instant the snake was motionless; in the next he was one congeries of coils round his prey. He had seized the rabbit by the neck just under the ear, and was evidently exerting the strongest pressure round the thorax of the quadruped; thereby preventing the expansion of the chest, and at the same time depriving the anterior extremities of motion. The rabbit never cried after the first seizure:—he lay with his hind legs stretched out, still breathing with difficulty, as could be seen by the motion of his flanks. Presently he made one desperate struggle with his hind legs; but the snake cautiously applied another coil with such dexterity as completely to manacle the lower extremities, and, in about eight minutes, the rabbit was quite dead. The snake then gradually and carefully uncoiled himself, and, finding that his victim moved not, opened his mouth, let go his hold, and placed his head opposite to the fore part of the rabbit. The boa generally, I have observed, begins with the head; but in this instance the serpent, having begun with the fore-legs, was longer in gorging his prey than usual, and in consequence of the difficulty presented by the awkward position of the rabbit, the dilatation and secretion of lubricating mucus were excessive. The serpent first got the fore-legs into his mouth; he then coiled himself round the rabbit, and appeared to draw out the dead body through his folds; he then began to dilate his jaws, and holding the rabbit firmly in a coil as a point of resistance, appeared to exercise at intervals the whole of his anterior muscles in protruding his stretched jaws and lubricated mouth and throat at first against, and soon after gradually upon, and over his prey. The curious mechanism in the jaws of serpents which enables them to swallow bodies so disproportioned to their apparent bulk is too well known to need description; but it may be as well to state that the symphysis of the under jaw was separated in this case, and in others which I have had an opportunity of observing. When the prey was completely ingulphed, the serpent lay for a few moments with his dislocated jaws still dropping with the mucus which had lubricated the parts, and at this time he looked quite sufficiently disgusting. He then stretched out his neck, and at the same moment the muscles seemed to push the prey further downwards. After a few efforts to replace the parts, the jaws appeared much the same as they did previous to the monstrous repast.

'I now proceed to the first of the two points above alluded to, and have to state my opinion that the boa constrictor does respire "when his head and neck have no other appearance than that of a serpent's skin stuffed almost to bursting;" and I think that, upon a more close examination, the same phenomenon would have been observable in the serpent shipped at Batavia. It is to be regretted that the dissection of that serpent appears to have been confined to the stomach; at least nothing is said of any other part of the animal. I have never had an opportunity of dissecting

the pulmonary system of a boa*, or of satisfying myself as to the structure of the extremely long trachea, which must be very firm to resist such an immense pressure, but I believe, from a near and accurate inspection, in company with others, that respiration goes on during the period of the greatest dilatation. While these serpents are in the act of constringing or of swallowing their prey, they appear to be so entirely pervaded by the *ὀπίσκει*† which then governs them, that I am convinced they would suffer themselves to be cut in pieces before they would relinquish their victim. I have assisted in taking them up and removing them with their prey in their coils, without their appearing to be in the least disturbed by the motion, excepting that, if after the victim is no more and the constriction is somewhat relaxed, an artificial motion be given to the dead body, they instantly renew the constriction. When thus employed they may be approached closely and with perfect security for the reason above stated, and I have uniformly found that the larynx is, during the operation of swallowing, protruded sometimes as much as a quarter of an inch beyond the edge of the dilated lower jaw‡. I have seen, in company with others, the valves of the glottis open and shut, and the dead rabbit's fur immediately before the aperture stirred, apparently by the serpent's breath, when his jaws and throat were stuffed and stretched to excess. In the case above mentioned, where the prey was taken very awkwardly, and the dilatation was consequently much greater than usual, I saw this wonderful adaptation of means to the exigencies of the animal much more clearly than I had ever seen it before.

'With regard to the next point, it is more difficult to account for the variance between the agony of antipathy shown by the goat as described by Mr. M'Leod, and the indifference which I have uniformly observed in the full grown fowls and rabbits presented to these serpents for prey. Immediately after our boa had swallowed his first rabbit, a second was introduced; but the serpent now exhibited a very different appearance. The left side of his lower jaw was hardly in its place, and he moved about the cage instead of lying in wait as on the former occasion. As for the rabbit, after he had been incarcerated a little while, he treated the snake with the utmost contempt, biting it when in his way, and moving it aside with his head. The snake, not having his tackle in order, for his jaw was not yet quite right, appeared anxious to avoid the rabbit, which at last stumbled upon the snake's head in his walks, and began to treat it so roughly, that the rabbit was withdrawn for fear of his injuring the snake. This treatment of the snake by the rabbit did not appear to be the effect of anger or hatred, but to be adopted merely as a mode of removing something, which he did not appear to understand, out of his way. I have seen many rabbits and fowls presented to different specimens of boa for prey, and I never saw the least symptom of uneasiness either in the birds or quadrupeds. They appear at first to take no notice of the serpent, large as it is, and when they do discover it they do not start, but seem to treat it with the greatest indifference. I remember one evening going up into the room where one of these snakes was kept at Exeter Change, and seeing the hen which was destined for the prey of the boa, very comfortably at roost upon the serpent. The keeper took the hen in his hands and held it opposite to the head of the snake, without succeeding in inducing him to take the bird, which, when let out of the keeper's hands again, settled herself down upon the serpent for the night.

'The only solution which I can offer of the difference between Mr. M'Leod's description and my experience, is one which I do not propose as absolutely satisfactory, but which may nevertheless be found to approach the truth. The goats put on board at Batavia for the serpent, which it appears was brought from Borneo, were in all probability natives of Java, and if so, they would, according to the wonderful instinct which nature has implanted in animals for their preservation, be likely to have a violent antipathy to large serpents, such as those which there lurk for their prey. The great Python is a native of Java, and if these goats were wild, or originally from the wild stock of the island, their instinctive horror at the sight of the destroyer may be thus accounted for. But our domestic fowls and rabbits (the stock of the latter most probably indigenous, and that of the former of such remote importation, and so much changed by descent, as to be almost on the same

American boa so much resembles that of the Indian boa, or python, and the habits of both, particularly in taking their prey, are so similar, that a true description of the predatory habits of the python will give a satisfactory idea of those of the boa.

* See ante, p. 22

† Appetite.

‡ See ante p. 23.

footing), having no such natural enemy as a large serpent, against which it is necessary for them to be on their guard, are entirely without this instinct, although it is strong enough in the case of their ordinary enemies, such as hawks, dogs, and cats; and they consequently view the boa which is about to dash at them with the same indifference as if he were a log of wood.*

The author of the foregoing paper, in conclusion, gives to persons who have the care of these reptiles a hint not to expose their hands too much in holding fowls, &c., to the head of a boa when near shedding its skin, and consequently nearly blind (for the skin of the eye is changed with the rest), in order to induce it to take its prey. Mr. Cops, the keeper of the lion-office, was holding a fowl to the head of the largest of the five snakes which were there kept, when the serpent was in this condition. The snake darted at the bird, missed it, but seized the keeper by the left thumb, and coiled round his arm and neck in a moment. Mr. Cops, who was alone, did not lose his presence of mind, and immediately attempted to relieve himself from the powerful constriction by getting at the snake's head. But the serpent had so knotted himself upon his own head, that Mr. Cops could not reach it, and had thrown himself on the floor, in order to grapple with a better chance of success, when two other keepers coming in, broke the teeth of the serpent, and with some difficulty relieved Mr. Cops from his perilous situation. Two broken teeth were extracted from the thumb, which soon healed; and no inconvenience of any consequence was the result of this frightful adventure.

In this instance, the snake fixed itself by its tail to one of the posts of its cage, thus bringing the spurs into action and giving itself greater power.

We now proceed to a consideration of the subdivisions of the genus *Boa*, properly so called, founded on the integuments of their head and jaws, adopted by Cuvier.

Head covered to the end of the muzzle with small scales like those of the body. The plates with which the jaws are provided not dimpled (crousées de fossettes).

EXAMPLE. *Boa Constrictor* of Linnæus; *Devin*, or *Emperor Boa*, of Daudin.



[*Boa Constrictor.*]

This powerful species is distinguished by a large chain extending the whole length of the back, composed alter-

nately of great blackish stains or spots irregularly hexagonal, and of pale oval stains or spots notched or jagged at either end, the whole forming a very elegant pattern. Shaw, in his lectures, mentions a skin of this species, measuring thirty-five feet, preserved in the British Museum, and adds, that it is probable that many ages ago much larger specimens might have occurred than any at present to be found, the increased population and cultivation of most countries having tended more and more to lessen the number of such animals. The locality of this species, according to the best authorities, is confined to the New World. Daudin, indeed, believed that it was found in the antient continent, but without sufficient grounds for his opinion. Le Vaillant and Humboldt brought it from Guiana, and the Prince de Wied found it in Brazil. Cuvier gives it as his opinion that there are no true boas of large size in the old world.

Linnaeus, quoting Dahlberg, says that the *Boa Constrictor* was worshipped by the Americans.

'Snake-worship,' says Dr. Southey, in his notes to *Madoc*, 'was common in America. *Berna Dios*,* p. 3. 7. 125. The idol described, vii. p. 25, somewhat resembles what the Spaniards found at Campeche, which is thus described by the oldest historian of the discoveries. "Our men were conducted to a broad *crosse-way*, standing on the side of the town. Here they shew them a square stage or pulpit four *steppes* high, partly of clammy bitumen, and partly of small stones, whereto the image of a man cut in marble was joyned, two four-footed unknown *beastes* fastening upon him, which, like *madde dogges*, seemed they would tear the marble man's guts out of his belly. And by the image stood a serpent, besmeared all with *goare bloud*, devouring a marble lion, which serpent, compacted of bitumen and small stones incorporated together, was seven and *fortie* feet in length, and as *thicke* as a great ox. Next unto it were three rafters or stakes fastened to the ground, which three others crossed under-propped with stones; in which place they punish malefactors condemned, for proof whereof they saw innumerable broken arrows, all *bloudie*, scattered on the ground, and the bones of the dead cast into an inclosed *courte neere* unto it."—*Pietro Martire*.'

Bullock, in his 'Six Months in Mexico,' speaks of a noble specimen of the great serpent-idol, almost perfect and of fine workmanship, in the cloisters behind the Dominican convent. This monstrous divinity is represented, according to him, in the act of swallowing a human victim, which is seen crushed and struggling in its horrid jaws. That these Mexican serpent-idols were fashioned from boas, there can, we think, be but little doubt.† Such were most probably the *Tilicoatl*, *Temacuilcahuilia*,‡ and the *Bitis* of Hernandez, who describes the latter as of the thickness of a man, and says that it ascends trees, whence it vibrates, being fixed by its tail, 'and snatches men and boars and other animals of that kind, sometimes devouring them whole.' This serpent he mentions indeed as a production of the island 'Cubu,' and as seen in the island *Lutaya* by the Spaniards when they were anxious to disburthen their ships. The *Tilicoatl* and *Temacuilcahuilia* appear to have been continental; and of the serpent last named he gives so formidable an account that there appears every reason for supposing it to have been the prototype of the snake-god of the Mexicans. 'It derives its name,' says Hernandez, 'from its strength, for *Temacuilcahuilia* is, fighting with five men; it attacks those it meets, and overpowers them with such force that if it once coils itself round their necks it strangles and kills them, unless it bursts itself by the violence of its own efforts; and he goes on to state how its attack is avoided by the man opposing a tree or other object to its constriction, so that while the serpent fancies that it is compressing the man it may be torn asunder by its own act, and so die. The same author states that he had seen serpents as thick as a man's thigh, which had been taken when young by the Indians and tamed, and how they were provided with a cask strewn with litter, in the place of a cavern, where they lived and were for the most part quiescent except at meal times, when they came forth and amicably climbed about the couch or shoulders of their master, who placidly bore the serpent-embrace

* Bernard (or Bernal, or Bernardo) Diaz del Castillo.

† Besides the name of *Constrictor formosissimus*, expressive of its beauty, Laurenti, according to Gmelin, gives the following appellations to the *Boa constrictor*:—*Constrictor rex serpentum*, *Constrictor anasax*, *Constrictor dirialis*. The two latter plainly indicate the superstitious feeling with which it was regarded by the natives.

‡ See post. p. 37.

(amplexus) of the terrific animal, or how, lying coiled up in folds and equalling a large wheel in size, they harmlessly received the food offered to them. In the description of the *Temaculcahuilia* we have, allowing for some exaggerations, the predatory habits of an enormous boa; and in the relation of the manners of the tamed constricting serpents which follows it, we find an engine which might be, and no doubt was, turned to account by the ancient Mexican priests. Such a piece of priestcraft is well introduced by Southey, who in the following masterly lines brings before the eye of the reader the priest and his snake-god.

— 'On came the mighty snake,
And twined, in many a wreath, round Neolin;
Darting ariht, aleft, his sinuous neck,
With searching eyes, and lifted jaw and tongue
Quivering, and hiss as of a heavy shower
Upon the summer woods. The Britons stood
Astounded at the powerful reptile's bulk,
And that strange sight. His girth was as of man,
But easily could he have overtopped
Goliath's helmed head, or that huge king
Of Basan, hugest of the Anakim:
What then was human strength, if once involved
Within those dreadful coils? . . . The multitude
Fell prone, and worshipped.'

Madoc, book vii.

Without entering into the details of Captain Stedman's well-known description of his encounter with one of these serpents at Surinam,—of the power exerted by the reptile in its dying agonies, and of the appearance of his naked and gory negro David, as, clinging to the yet writhing serpent which had been made fast to a strong forked bough, he stripped off its skin as he descended,—we may advert to the alleged length of the snake which, though it was pronounced to be a young one by the natives, is stated to have measured twenty-two feet and some inches in length. The captain says that he obtained from this boa four gallons of fine clarified fat, or rather oil, though there was wasted perhaps as much more. The negroes cut the flesh to pieces for the purpose of dressing it. Captain Stedman however would not suffer them to eat it, although they declared that it was exceedingly good and wholesome.

The following extract from a letter dated 'City of Caracas,' and written by Sir Robert Ker Porter, has been published. The letter accompanied a fine specimen of boa, nineteen feet and a half in length, presented by Sir Robert to the United Service Museum, where it is now (1835) preserved.

The specimen is exhibited and was probably presented under the name of *boa constrictor*. It is not well preserved, but it has more the appearance of a *Boa Scytale* than of the former species:—'The name which this colossal reptile goes by in Venezuela is that of "La Culebra de Agua," or "Water Serpent;" and also that of "El Traga Venado," or "Deer Swallower." It is not venomous, nor known to injure man (at least not in this part of the New World); however the natives of the plains stand in great fear of it, never bathing in waters where it is known to exist: Its common haunt, or rather domicile, is invariably near lakes, swamps, and rivers; likewise close to wet ravines produced by inundations of the periodical rains; hence, from its aquatic habits, its first appellation. Fish and those animals which repair there to drink are the objects of its prey. The creature lurks watchfully under cover of the water, and whilst the unsuspecting animal is drinking, suddenly makes a dash at its nose, and with a grip of its back-reclining double range of teeth, never fails to secure the terrified beast beyond the power of escape. In an instant the sluggish waters are in turbulence and foam, the whole form of the Culebra is in motion, its huge and rapid coils soon encircle the struggling victim, and but a short moment elapses ere every bone is broken in the body of the expiring prey. On its ceasing to exist the fleshy tongue of the reptile is protruded (taking a long and thinnish form), passing over the whole of the lifeless beast, leaving on it a sort of glutinous saliva that greatly facilitates the act of deglutition, which it performs gradually by gulping it down through its extended jaws,—a power of extension of them it possesses to so frightful and extraordinary a degree as not to be believed when looking at the comparative smallness of the mouth and throat in their tranquil state. After having completely devoured or rather hidden its prey in the way described, it becomes powerless as to motion, and remains in an almost torpid state for some days, or until nature silently digests the swallowed animal. The snake now sent was killed with lances, when just regaining its powers of action.

'The flesh of this serpent is white, and abundant in fat. The people of the plains never eat it, but make use of the fat as a remedy for rheumatic pains, ruptures, strains, &c. When these creatures are young the colours on the skin are very bright, and gradually lose their brilliancy with age.'

There is generally in these descriptions an account of the fleshy tongue of the reptile, and of its application to the dead animal for the purpose of covering it with saliva, previous to the operation of swallowing it. A glance at the tongue of a Boa or a Python will convince the observer that few worse instruments for such a purpose could have been contrived. The delusion is kept up by the mode in which these serpents are sometimes preserved in museums, where they may be occasionally seen with fine artificial, thick, fleshy, vermilion tongues in the place of the small dark-coloured extensile organs with which nature has furnished them. We have frequently watched constricting serpents while taking their prey, and it is almost superfluous to add that they never covered the victim with saliva from the tongue before deglutition. When the prey is dead and the serpent is about to swallow it, the tongue of the destroyer is frequently thrust forth and vibrated, as if indicative of the desire for food; but the mucus is not poured out till it is required to lubricate the dilated jaws and throat for the disproportioned feast.

The Rev. Lansdown Guilding thus records the capability of the Boa to cross the seas:—'A noble specimen of the *Boa Constrictor*,' says that lamented zoologist, 'was lately conveyed to us by the currents twisted round the trunk of a large sound cedar-tree, which had probably been washed out of the bank by the floods of some great South American river, while its huge folds hung on the branches as it waited for its prey. The monster was fortunately destroyed after killing a few sheep, and his skeleton now hangs before me in my study, putting me in mind how much reason I might have had to fear in my future rambles through St. Vincent had this formidable reptile been a pregnant female, and escaped to a safe retreat.'

**

*Scaly plates from the eyes to the end of the muzzle.
No dimples on the jaws.*

EXAMPLE. *Boa Scytale* and *Boa murina* of Linnæus, *Boa aquatica* of Prince Maximilian. This species referred to



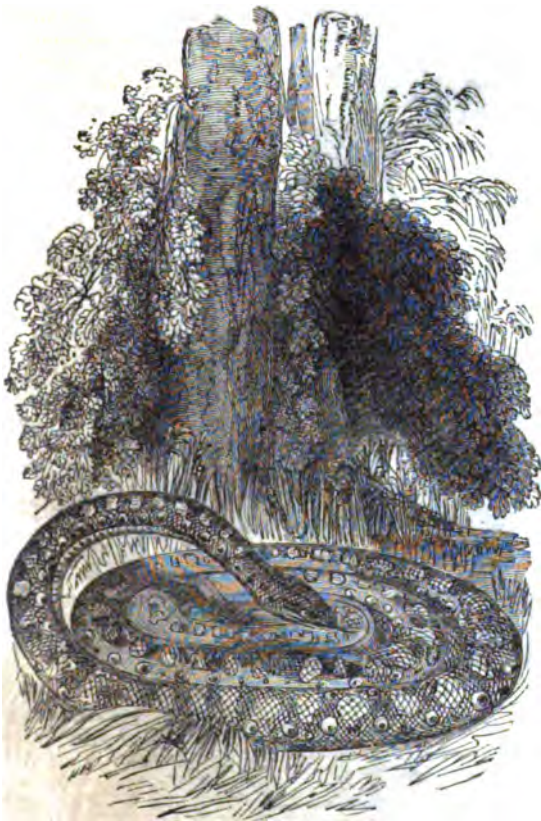
[*Boa Scytale*.]

by Linnæus under two specific names, according to Cuvier, is the *Boa aquatica* of Prince Maximilian and the Anaconda according to the same authority. Mr. Bennett observes in 'The Tower Menagerie' that the name of Anaconda, like that of *Boa Constrictor*, has been popularly applied to all the larger and more powerful snakes. He adds that the word appears to be of Ceylonese origin, and applies it to the Python Tigris.

Brownish, with a double series of roundish black blotches all down the back. The lateral spots annular and ocellated, the disks being white, surrounded by blackish rings. Inhabits South America. The trivial name *Murina* was given to it from its being said to lie in wait for mice, and Seba has given a representation of it about to dart upon an American mouse, which he says is its usual food. Such 'small deer' may be the prey of this species when very young, but it grows to a size equalling that of *Boa constrictor* and *Boa cenchria*. We think it very probable that this is the 'Culebra de Agua' of the Venezuelans mentioned above.† The other provincial name, 'El Traga Venado,' or 'Deer Swallower,' indicates the prey of the serpent when of mature age. Linnæus says of his *Boa Scytale*, 'Constringit et deglutit capras, oves,' &c. 'It constricts and swallows goats, sheep,' &c. The *Boa murina*, then, was probably only a young *Boa Scytale*.

Scaly plates on the muzzle; and dimples upon the plates at the sides of the jaws.

EXAMPLE. *Boa cenchria* of Linnæus, *Boa cenchris* of Gmelin, *Boa cenchrya* of Prince Maximilian, *Aboma* and *Porte-anneau* of Daudin.



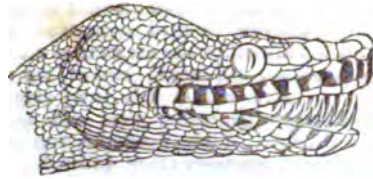
[*Boa cenchria*.]

Yellowish, with a row of large brown rings running the whole length of the back, and variable spots on the sides. These are generally dark, often containing a whitish semilunar mark. This species, according to Seba, who describes it as Mexican, is the *Temacuilcahuilia* (or *Tamacuilla Huilia*, as Seba writes the word) described by Hernandez, and hereinbefore mentioned.‡ The three species here described, according to Cuvier, grow nearly to the same size, and haunt the marshy places of the warm parts of South America. There, adhering by the tail to some aquatic tree, they suffer the anterior part of the body to float upon the

* *Boa aquatica*. † See ante, p. 26. ‡ See ante, p. 25.

water, and patiently wait to seize upon the quadrupeds which come to drink.

Plates upon the muzzle, and the sides of the jaw hollowed into a kind of slit under the eye, and beyond it.



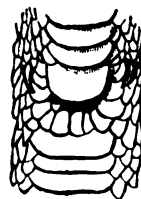
[Head of *Boa canina*.]

EXAMPLE. *Boa canina* of Linnæus, *Xiphosoma ararambaja* of Spix.



[*Boa canina*.]

Greenish, with white irregular longish spots somewhat annularly disposed. This is the *Boa viridis* of Boddaert, the *Boa thalassina* of Laurenti, the *Bojubi* of the Brazilians, the *Tetraucoatl Tleoa** (a Mexican name) according to Seba, and the *Cobra verde* of the Portuguese, who relate that these serpents sometimes remain in the houses, doing no harm till irritated, when they at last bite and inflict a wound full of danger, not from injected poison, for the serpent has none, but on account of the injury sustained by the nerves from the very sharp, slender, and long teeth. Great inflammation follows, and the symptoms are aggravated by terror, so that a gangrene is the consequence unless the proper remedies are applied. In the absence of these certain death is said to be the consequence of a severe bite from this serpent. The immediate cause of death is not stated by Seba, but from the long and penetrating teeth of the *Boa canina* it may be presumed to be often tetanus or locked jaw. Seba says that this species varies in size, adding that the specimen from which his figure was taken was more than two cubits in length. Cuvier is of opinion that the *Boa hispale* is only a young *Bojubi* or *Boa canina*.



[A portion of the under part of the tail of *Boa canina*, showing the hooks near the vent, and the arrangement of the scuta.]

[See CENCHRIS, ERPETON, ERYX, PSEUDO-BOA, SCYTALIS, XIPHOSOMA.]

* 'Tleoa,' according to Seba, means 'a fiery serpent.'

BOADICE'A, BOODICEA, BONDICEA, or BOUNDORICEA (*Boudouka* in Dion Cassius), lived in the middle of the first century, and was the wife of Prasutagus, the king of the Iceni, a tribe of Britons inhabiting Norfolk and Suffolk. Prasutagus at his death bequeathed his wealth, which was very great, to his two daughters and to the Roman emperor, a device resorted to in those times with the hope that it would confine the emperor to a share of the deceased's possessions, and would rescue the remainder from his officers. Nero was at this time emperor; and Suetonius Paullinus, a general of great skill and energy, commanded in Britain. While Suetonius was occupied in attacking the Isle of Anglesey (then called Mona), Catus, the procurator or collector of the revenue, was guilty of great rapacity among the Britons in the east. He caused Boadicea, on whom the government of her nation had devolved by the death of her husband, to be scourged, and her daughters to be violated. The provocation for this outrage is not recorded. Probably it was the same which instigated the cruelty once inflicted by the English on native princesses in India: the government wanted money. The crime however brought its punishment. The Iceni and their neighbours, the Trinobantes (who dwelt in what is now Essex and Middlesex), flew to arms. They first attacked and destroyed the Roman colony of Camalodunum (Colchester), and defeated a Roman legion which was coming to the relief of the place, under the command of Petilius Cerialis. The insurgents also massacred the Romans at Verulamium (St. Alban's), a considerable municipium [see **MUNICIPALIUM**], and at London, which was then famous for its commerce. Catus fled into Gaul. Tacitus says that the Romans and their allies were destroyed to the number of 70,000, many of whom perished under torture.

Suetonius hastened to the scene of this revolt; and abandoning London, which he had no means of defending, posted himself with an army of about 10,000 men in a narrow pass, his rear being guarded by a wood, A.D. 61. The Britons were commanded by Boadicea, who, in a chariot with her two daughters, went from one tribe to another exhorting them to fight bravely. They seem however to have met the usual fate of uncivilized armies. Without combination, encumbered by their very multitude, impeded by their women who surrounded them, and by their unwieldy chariots, they suffered a universal carnage. Tacitus, a nearly contemporary historian, estimates the destruction at 80,000 persons, an incredible number, although he says that the Romans did not spare even the women and the animals, who added to the heaps of slain. Boadicea, he tells us, killed herself by poison. Dion Cassius however (lxii. 12), who lived about a century after Tacitus, attributes her death to disease, if the passage is not corrupt. See Ernesti's *note on Tacitus*, xiv. 37. (*Taciti Annal.* xiv. 31, &c.)

BOAR. [See **HOG.**]

BOARD, a word used to denote, in their collective capacity, certain persons to whom is intrusted the management of some office or department, usually of a public or corporate character. Thus, the lords of the treasury and admiralty, the commissioners of customs, the lords of the committee of the privy council for the affairs of trade, &c., are, when met together for the transaction of the business of their respective offices, styled the Board of Treasury, the Board of Admiralty, the Board of Customs, the Board of Trade, &c. The same word is used to designate the persons chosen from among the proprietors to manage the operations of any joint-stock association, who are styled the Board of Directors. In parochial government the guardians of the poor, &c., are called the Board of Guardians, &c. The word *bureau* in France is an equivalent expression.

BOA'RMIA (Stephens, in entomology), a genus of moths of the family *Geometridæ*. All the species of this genus are of an ashy colour, or white minutely dotted with brown, and adorned with several fasciæ of a deeper colour; the antennæ of the males instead of being pectinated, a character common in the *Geometridæ*, are pilose; palpi short, clothed with short scales, three-jointed, the two basal joints of equal length, the terminal joint concealed; antennæ simple in the females; thorax small, velvety; wings, when at rest, placed horizontally; body slender in the males, in the females shorter and more robust.

Mr. Stephens, in his *Illustrations of British Entomology*, enumerates seven species of this genus, most of which are found in woods in the neighbourhood of London. For

descriptions of these species we refer our readers to the work above-mentioned.

BOAT. [See **LIFE-BOAT.**]

BOAT-BILL (zoology), the English name for the genus *Cochlearius* of Brisson, *Cancroma* of Linnæus, *Les Savacous* of the French.

This genus of the family *Ardeidæ* (heron-like birds) would approach quite closely, as Cuvier observes, to the herons (genus *Ardea*, Cuv.), in regard to their bill and the kind of food which it indicates, were it not for the extraordinary form of that organ, which is nevertheless, when closely observed, the bill of a heron or a bittern very much flattened out. This bill is of an oval form, longer than the head, very much depressed, and not unlike the bowls of two spoons placed one upon another, with the rims in contact. The mandibles are strong, with sharp edges, and dilated towards the middle. The upper mandible is carinated, and hooked at its point, which has a small tooth or notch on each side of it. The lower mandible is flatter than the upper, straight, membranous in the centre, and terminated by a sharp point. The nostrils are oblique, longitudinal, and closed.

The first quill is short; the five next are the longest. The feet are furnished with four toes, all long, and almost without membranes.

Though zoologists have described more than one species, it appears that they may be referred to the only species yet known, *Cochlearius fuscus* of Brisson, *Cancroma cochlearia* of Linnæus, *Le Savacou* of Buffon, the differences on which *Cancroma cancrophaga* (Linn., &c.) is founded not being allowed to be specific. Leach, in his *Zoological Miscellany*, figures and describes 'the common boat-bill' under the title of *Cancroma vulgaris*, but assigns no reason for altering the specific name given by Linnæus.



[*Cancroma cochlearia*, male.]

The common boat-bill is about the size of a domestic hen. In the male, the forehead, and upper parts of the neck and breast, are dirty white; the back and lower part of the belly rusty-reddish; the bill is black, and the legs and feet are brown. From the head depends a long crest of black feathers, falling backwards.

The female has the top of the head black, without the elongated crest; the back and the belly rusty-reddish; the wings grey; the forehead and rest of the plumage white; and the bill, legs, and feet brown.

'This species,' says Latham in his Synopsis, 'for I refer all that has been treated of above to one only, inhabits Cayenne, Guiana, and Brazil, and chiefly frequents such parts

as are near the water. In such places it perches on the trees which hang over the streams, and, like the kingfisher, drops down on the fish which swim beneath. It has been thought to live on crabs likewise, whence the Linnæan name; but this is not clear, though it cannot be denied; yet we are certain that fish is the most common, if not the only food.

Lesson, in his *Manual* (1828), says, 'the boat-bill perches on trees by the side of rivers, where it lives on fish, and not on crabs, as its name indicates;' and speaks of it as inhabiting the inundated savannahs of South America, and as being especially common in Guiana.

Leach, in his *Zoological Miscellany* (1815), says that it inhabits Southern America, and feeds on fishes, *vermes* and *crustacea*, in quest of which it is continually traversing the borders of the sea.

Cuvier, in his *Règne Animal* (1829), says that it inhabits the warm and moist parts of South America, and perches on trees by the side of rivers, whence it precipitates itself on the fish which afford its ordinary nourishment.

We saw this bird alive in Exeter Change some years ago. In captivity it had the melancholy air and gait of the herons and bitterns, which it has also, according to authors, in a state of nature. The food of this captive bird was principally fish.

BOATSWAIN, a warrant officer in a ship of war who has the care of the rigging, cables, cordage, anchors, sails, boats, flags, colours, and other stores, which are committed to his charge by indenture from the surveyor of the navy. He has particular charge of the long boat and its furniture, and it is his duty to steer it, either himself or by his mate. One of the chief duties which devolve upon this officer is to attend to the rigging of the vessel, which he is charged to inspect every morning; not only to observe that everything is properly fitted and arranged in its place, but to see that all things are in good condition, to remove whatever may be judged unfit for service, and to supply whatever may be deficient. He cannot however cut up or otherwise appropriate any cordage or canvass for the public uses of the ship without a written order from the captain, and under the inspection of the master. His instructions inculcate the utmost frugality in the use of the stores intrusted to him; and at the end of a voyage he must present to the surveyor of the navy minute accounts, previously audited and vouched by the captain and master, of the purposes to which all the stores in his department have been applied, or of the circumstances under which they may have been lost, stolen, misapplied, or returned to the dock-yard. He cannot receive his pay till his accounts have been approved.

In this department the boatswain is much under the control of the master; his more exclusive function is that superintendence and control which he exercises over the men. He summons the crew to their duty, assists with his mates in the necessary business of the ship, and relieves the watch when its time expires. His calls on the crew are made by a silver whistle of a peculiar construction, well-known as the 'boatswain's whistle.' He must observe that the men attend when called, and that they properly perform their duties; and he is enjoined to observe, 'that the working of the ship be performed with as little noise and confusion as possible.' The boatswain is a sort of provost-marshal in the ship, taking offenders into custody and inflicting such punishments as may be awarded by the captain or by a court-martial. These latter functions he performs through his mates, whose office is perhaps the most unpopular in the navy. A boatswain is entitled to superannuation after fourteen years' service. His pay during service varies, according to the rate of his ship, from 4*l.* to 2*l.* per month, and he is allowed two servants in all ships the crew of which exceeds 100 men. The number of his mates varies from four to one, according to the size of the vessel, and their pay similarly varies from 3*l.* 10*s.* to 2*l.* per month. (*Regulations and Instructions relating to his Majesty's Sea Service; Harris's Lexicon Technicum; Table of Naval Allowances, &c.*)

BOBER, THE, a large river in Prussian Silesia, has its source near Oppau, to the north-west of Schatzlar, on the north slope of the Giant Mountains (Riesengebirge), and close upon the borders of Bohemia. It traverses the plateau of Hirschberg, and during this course, as well as until it reaches Braunau, a village in the Silesian circle of Liegnitz, flows through a narrow and, in general, rocky valley. From Hirschberg its general course is north past Bunzlau to the junction of the Sprotte, whence it takes a general N.N.W.

course to its junction with the Oder at Krossen, or Crosse. Its waters are increased by several small rivers and streams, the most considerable of which are the Zacken, which issues from the Zackenfall, one of the Bohemian Giant Mountains, about 2150 feet in height, and falls into the Bober near Hausberg; and the Queiss, which rises near Giehren, and empties itself into the Bober, on the left bank, at Machen above Sagan. The Bober is about 140 miles in length, and flows through the towns of Hirschberg and Bunzlau in Prussian Silesia, and through Bobersberg and Krossen in Brandenburg. It contains pearls.

BOB-O-LINK, or **BOB-LINK** (Zoology), the usual name by which the 'rice-bird,' or 'reed-bird'—the 'skunk-bird' (*Seecaok-petheesew*) of the Cree Indians, the 'rice-bunting' of Pennant and of Wilson, 'rice-troopial' of authors, *Hortulanus Carolinensis* of Catesby, *Emberiza orizyvara* of Linnæus, *Icteria agripennis* of Bonaparte, *Dolichonyx orizyvorus* of Swainson—is known in the United States.



[*Dolichonyx orizyvorus*.]

Catesby, Wilson, Audubon, and Nuttall give the most complete accounts of this well-known bird:—'The whole continent of America,' says the latter, 'from Labrador to Mexico, and the great Antilles, are the occasional residence of this truly migratory species. About the middle of March, or beginning of April, the cheerful bob-o-link makes his appearance in the southern extremity of the United States, becoming gradually arrayed in his nuptial livery, and accompanied by troops of his companions, who often precede the arrival of their more tardy mates.' (Bartram's *Travels*, p. 295, edit. Lond.) 'Their wintering resort appears to be rather the West Indies than the tropical continent, as their migrations are observed to take place generally to the east of Louisiana, where their visits are rare and irregular.' (Audubon's *Ornithological Biography*, vol. i. p. 283.) At this season also they make their approaches chiefly by night, obeying, as it were, more distinctly the mandates of an overruling instinct, which prompts them to seek out their natal regions; while in autumn their progress, by day only, is alone instigated by the natural quest of food. About the 1st of May the meadows of Massachusetts begin to re-echo their lively ditty. At this season in wet places, and by newly ploughed fields, they destroy many insects and their larvæ, but, while on their way through the southern States, they cannot resist the temptation of feeding on the early wheat and tender barley. According to their success in this way, parties often delay their final northern movement as late as the middle of May, so that they appear to be in no haste to arrive at their destination at any exact period. The principal business of their lives, however, the rearing of their young, does not take place until they have left the parallel of the 40th degree. In the savannahs of Ohio and Michigan, and the cool grassy meadows of New York, Canada, and New England, they fix their abode, and ob-

tain a sufficiency of food throughout the summer without molesting the harvest of the farmer; until the ripening of the latest crops of oats and barley, when, in their autumnal and changed dress, hardly known now as the same species, they sometimes show their taste for plunder, and flock together like the greedy and predatory blackbirds.'

The song of the male generally ceases about the first week in July, and about the same time his variegated dress, which, from a resemblance in its colours to that of the quadruped, obtained for it the name of 'skunk-bird' among the Cree Indians, is exchanged for the sombre hues of the plumage of the female. The author above quoted thus describes the autumnal migration:—

'About the middle of August, in congregating numbers, divested already of all selective attachment, vast foraging parties enter New York and Pennsylvania on their way to the south. Here, along the shores of the large rivers, lined with floating fields of the wild rice (*Zizania*), they find an abundant means of subsistence during their short stay; and as their flesh, now fat, is little inferior to that of the European ortolan, the reed, or rice-birds, as they are then called in their sparrow dress, form a favourite sport for gunners of all descriptions, who turn out on the occasion, and commit prodigious havoc among the almost silent and greedy roosting throng. The markets are then filled with this delicious game, and the pursuit, both for success and amusement, along the picturesque and reedy shores of the Delaware and other rivers, is second to none but that of rail-shooting. As soon as the cool nights of October commence, and as the wild rice crops begin to fail, the reed-birds take their departure from Pennsylvania and New Jersey, and in their further progress through the southern States they swarm in the rice-fields; and before the crop is gathered they have already made their appearance in the islands of Cuba and Jamaica, where they also feed on the seeds of the Guinea grass (*Sorghum*), becoming so fat as to deserve the name of "butter-birds," and are in high esteem for the table.'

Catesby, under the name of Carolina ortolan, gives the following interesting account of the rice-bird, from which it appears that the damage done to the farmer by this comparatively weak agent is very great:—

'In the beginning of September, while the grain of rice is yet soft and milky, innumerable flights of these birds arrive from some remote parts, to the great detriment of the inhabitants. In 1724 an inhabitant near Ashley river had forty acres of rice so devoured by them, that he was in doubt whether what they had left was worth the expense of gathering in. They are esteemed in Carolina the greatest delicacy of all other birds. When they first arrive they are lean, but in a few days become so excessive fat that they fly sluggishly and with difficulty; and when shot frequently burst with the fall. They continue about three weeks, and retire by the time the rice first begins to harden. There is somewhat so singular and extraordinary in this bird that I cannot pass it over without notice. In September, when they arrive in infinite swarms to devour the rice, they are all hens, not being accompanied with any cock. Observing them to be all feathered alike, I imagined they were young of both sexes not perfected in their colours; but by opening some scores prepared for the spit, I found them to be all females, and, that I might leave no room for doubt, repeated the search often on many of them, but could never find a cock at that time of the year. Early in the spring both cocks and hens make a transient visit together, at which time I made the like search as before, and both sexes were plainly distinguishable. . . . In September, 1725, lying upon the deck of a sloop in a bay at Andros Island, I and the company with me heard three nights successively flights of these birds (their note being plainly distinguishable from others) passing over our heads northerly, which is their direct way from Cuba to Carolina, from which I conceive, after partaking of the earlier crop of rice at Cuba, they travel over sea to Carolina for the same intent, the rice there being at that time fit for them.'

It is evident that Catesby was not aware of the change of the plumage of the adult male at the termination of the breeding season, but it is singular that he should never have met with a cock among the scores which he opened in the autumn. Is it not possible that some temporary separation of the sexes may take place in Carolina at that time, as it does in the case of the chaffinch with us in the winter? It appears, from Bartram's account quoted by Nuttall, that the males frequently arrive in the spring before the females,

and we know that there is a temporary separation of the sexes among other birds besides the chaffinch. 'This separation of the sexes,' says Selby, speaking of the last-mentioned bird, 'I am induced to believe, takes place in many other species, with respect to their migratory movements, as I have before remarked in the account of the snow-bunting. This appears also to be the case with the woodcock, having observed that the first flight of these birds (which seldom remains longer than for a few days to recruit, and then passes southward) consists chiefly of females; whilst, on the contrary, the subsequent and latest flights (which continue with us) are principally composed of males.'

Dr. Richardson says that the 64th parallel, which it reaches in June, appears to be the most northern limit of the bob-o-link, and gives a description of a male in its nuptial dress, which was killed on the Saskatchewan in that month in the year 1827.

Swainson places it as a genus of his third sub-family, *Agelaiæ*, in the third, or aberrant group of his *Sturridæ*.

Grassy meadows are the spots usually selected by the bird for its nest, which is made on the ground, generally in some slightly depressed spot, of withered grass, so carelessly bedded together as scarcely to be distinguishable from the neighbouring parts of the field. Here five or six eggs of purplish-white, blotched all over with purplish, and spotted with brown round the larger end, are laid.

The length of the bob-o-link is about seven inches and a half. The male in his nuptial dress has the head, forepart of the back, shoulders, wings, tail, and the whole of the under plumage black, going off in the middle of the back to greyish; scapulars, rump, and upper tail-coverts white; there is a large patch of ochreous yellow on the nape and back of the neck; bill bluish-black, which in the female, young male, and adult male in his autumnal dress, is pale flesh-colour; the feathers of the tail are sharp at the end, like a woodpecker's; legs brown.

The female, whose plumage the adult male assumes after the breeding season, has the back streaked with brownish-black, not unlike that of a lark, according to Catesby, and the whole under parts of a dirty yellow. The young males resemble the females.

BOBROV, SEMEN SERGÆEVITCH, a Russian poet of some distinction, who commenced his literary career about 1784. His most important, if not most extensive work is the 'Kheronida,' a poem descriptive of the wild scenery, natural history, and antiquities of the Taurida. In this production, which first appeared in 1803, and was afterwards corrected and enlarged, there is much originality both of subject and manner, and it is further remarkable for being written in blank verse, a form before unknown to Russian poetry. Besides containing many very animated pictures of nature in the mountainous regions of the Taurid peninsula, there are many lyrical passages of great vigour, which, while they relieve the sameness of landscape description, breathe a powerful moral strain, and are replete with elevated sentiment and religious fervour. Some of the episodic parts are of a dramatic cast, being thrown into the form of dialogue, and along with these may be classed the narrative of the aged Shereef Omar, in the course of which he relates the history of the Taurida from the fabulous ages of Greece. One or two short extracts from this poem are translated in the first volume of Bowring's 'Russian Anthology,' but being mere fragments, they convey no idea of the general subject or plan. By the author himself it is termed a 'lyrico-epic' poem, which has misled Bowring himself, who elsewhere calls it an epic, at the same time intimating that it bears a resemblance to 'Lalla Rookh,' whereas there exists not the slightest analogy between the two compositions,—except it be that the 'Kheronida' has a certain oriental colouring of style and expression.

Bobrov was gifted with much imagination and feeling, but in aiming at energy and loftiness he was occasionally inflated in his language. He was exceedingly well read in English poetry, to which he is perhaps in some measure indebted for the best characteristics of his own. He died at St. Petersburg in 1810.

BOCAGE, LE, a district in Normandy, between the rivers Vire and Orne, of which the town of Vire (population, in 1832, 7500 for the town, 8043 for the whole commune) was the capital: it now forms part of the department of Calvados. The inhabitants are distinguished by the inferiority of their stature to that of the inhabitants of the plain of Caen, who are their neighbours, by the paleness of their

complexion and the liveliness of their look, by their attachment to their native soil, and their willingness to labour. The women share with the men the toils of field labour; they are lean, but robust in their bodily frame, and fruitful in bearing children. Civilization makes little progress among the inhabitants of this district, and the dress of both sexes has undergone little change for ages past. The animals, like the men, are distinguished by their small size; not merely the domestic animals, cows, horses, and sheep, but even the wild animals, hares, rabbits, and partridges. The large fowls of the neighbouring district of the *Vallée d'Auge* degenerate if transferred to *La Bocage*. The district yields little grain except oats, rye, and buckwheat, but there is some good pasture land. It contains wood; and some iron is wrought here. (Malte-Brun; Expilly.)

BOCCA, the Italian word for 'mouth,' is used by the Italians either in the singular or in the plural 'boche,' to designate the mouths of rivers, as 'Bocca d'Arno,' the mouth of the Arno, or the narrow straits leading into a bay, as 'Bocche di Cattaro,' the entrance into the Bay of Cattaro in Albania. By an analogous figure, the narrow pass in the Apennines on the old road from Piedmont to Genoa is called 'la Bocchetta,' the little mouth. But the word Bocca is more frequently used with reference to sea than land. The Spaniards use the word 'Boca' with only one *o*, according to their orthoepy, to designate similar narrow entrances of rivers or bays: 'Boca Chica,' *i. e.* the little mouth, is the entrance into the harbour of Carthage in South America. 'Boca del Drago,' the dragon's mouth, is the straits leading from the north into the gulf of Paris, between the island of Trinidad and the mainland of Cumana. Bocca Tigre is the name given by Europeans to the entrance of the river of Canton in China.

BOCCA/CCIO, GIOVANNI, born in 1313, was the son of Boccaccio di Chellino, a merchant of Certaldo in the Val d'Elsa in the territory of Florence. His mother was a French woman whom his father had become acquainted with during a visit to Paris; but whether he was born at Paris or Florence is not ascertained. He studied at Florence under the grammarian Giovanni da Strada until he was ten years of age, when his father apprenticed him to a merchant, with whom he went to Paris, where he spent six years. On his return to Florence, having expressed a dislike of mercantile pursuits, his father set him to study the canon law. After some years passed in this study, he was sent to Naples, where he became acquainted with several learned men about the court of King Robert, who was a patron of learning. Boccaccio says that the sight of Virgil's tomb near Naples determined his literary vocation for life, and that he then renounced all other pursuits.

In 1341, on Easter-eve, as he was attending service in the church of San Lorenzo, he was struck by the appearance of a beautiful young lady, with whom he fell deeply in love. His friend Petrarch fell in love with Laura in the same manner, by seeing her in the church of Sainte Claire in Avignon during the holy week of the year 1327. [See PETRARCA.] The object of Boccaccio's admiration proved to be Mary, of the family of Aquino, and a presumed daughter of King Robert of Naples. Boccaccio's attachment was returned; and to please his mistress he wrote 'Il Filocopo,' a romance in prose, at the beginning of which he relates the history of their love, and afterwards 'La Teseide,' a poem in ottava rima on the fabulous adventures of Theseus. This was the first romantic and chivalrous poem in the Italian language. The metre of the ottava rima he probably took from some of the Provençal poets who lived before him. (See Crescimbeni, *Commentari*, lib. iii.) Chaucer borrowed from the 'Teseide' his 'Knight's Tale,' afterwards remodelled by Dryden under the name of 'Palamon and Arcite.' Boccaccio dedicated the 'Teseide' to his Fiammetta, the name which he gave to his mistress Mary.

In 1342 Boccaccio was recalled home by his father, but in 1344 he returned to Naples, where he remained for several years. He there wrote the 'Amorosa Fiammetta,' in which he describes the pangs of absence from a beloved object. He also wrote 'Il Filostrato,' a poem in ottava rima, and 'L'Amorosa Visione,' a poem in terza rima, of which the initial letters of the first line of each *terzina* being placed in succession together by way of acrostic, compose two sonnets and a canzone in praise of his mistress, and this is the only way in which he has called her by her real name 'Mirja.' At this time he frequented the court of Queen Joanna, who had succeeded her father Robert. He

read his works to the queen, and at her desire, as it appears, he wrote his 'Decamerone,' a hundred tales, ten of which are supposed to be told every afternoon of ten successive days by a society of seven young women and three young men, who, having fled from the plague which afflicted Florence in 1348, had retired to a country-house some distance from the town. Most of the stories turn upon love-intrigues; they are full of humour and admirably told, but the details are often very licentious. Several of the tales however are unexceptionable, and are even moral. Some of the subjects of these tales are taken from older works, but most of them are original. (See Manni, *Storia del Decamerone*.)

While at Naples Boccaccio amused himself with writing in the Neapolitan dialect, in which there is extant a humorous letter addressed by him to Francesco de' Bardi, a Florentine merchant, in the year 1349. It appears that Boccaccio went from Naples to Calabria, and some say also to Sicily, either for the purpose of studying Greek, or in order to collect MSS. for his library. He seems also to have been acquainted with the Monk Barlaam, who was well versed in Greek. During his researches he visited Monte Casino, where he found the library in a sad state of dilapidation, through the neglect of the monks. (See Benvenuto da Imola's Commentary on Dante, *Paradiso*, c. xxii.)

About the year 1350 Boccaccio returned to Florence, where, by the death of his father, he had become possessed of his inheritance, which he spent in travelling and in purchasing MSS. chiefly of the Greek and Latin classics. What MSS. he could not purchase he contrived to copy.

His merits being now known and appreciated by his countrymen, he was employed by the state in several offices and missions. He was sent several times to Romagna, to the lords of Ravenna and Forlì, and afterwards on a mission to Louis of Bavaria, Marquis of Brandenburg in Germany, and again to Pope Innocent VI. In 1351 he was sent to Petrarch, who was then at Padua, to communicate to him the revocation of the sentence of exile passed against his father during the factions of 1302, as well as the restoration of his paternal property, which had been confiscated. Petrarch was at the same time invited to come and dwell in his paternal country, but he declined the invitation.

In 1355 Boccaccio wrote 'Il Corbaccio, ossia il Labirinto di Amore,' a kind of satire against women, full of indecent passages. It is said that he wrote it to revenge himself on a certain widow who had slighted his addresses. His Fiammetta appears to have died at Naples some time before. In 1360, having induced the Florentines to found a chair of Greek literature in their university, he repaired to Venice for a professor, and brought home with him Leontius Pilatus, a native of Calabria, who wished to pass himself off for a Greek, as Petrarch says. (*Epistola Senil.* lib. iii. 6.) Pilatus was a learned but uncouth man. Boccaccio lodged him in his own house, and treated him with great kindness notwithstanding his repulsive manners and bad temper. Three years after Leontius left Florence and went to Venice, and afterwards to Constantinople. On his return to Italy he was killed by lightning on board ship. Boccaccio learned Greek from Pilatus, who made for his pupil's use a Latin translation of Homer: a copy of this translation, made by Niccolò Niccoli, still exists in the Benedictine Library at Florence. (Tiraboschi, *Storia*, vol. v. lib. iii. cap. 1.) This translation by Pilatus has been ignorantly attributed to Petrarch. Petrarch only bespoke a copy of it, which Boccaccio sent him. (See Hody, *de Græcis Illustribus*, London, 1742.) It seems however that there was an older Latin translation of part at least of Homer's poems previous to that of Pilatus.

In 1361 a great change took place in Boccaccio's moral conduct. His life had till then been irregular, and most of his writings licentious, but in that year Father Ciani, a Carthusian monk, came to him and stated that Father Petroni of Siena of the same order, who had died shortly before in odour of sanctity, had commissioned him to exhort Boccaccio to forego his profane studies, reform his loose life, and prepare for death. To prove the truth of his mission, Ciani told Boccaccio several circumstances, known only to Boccaccio and Petrarch. Boccaccio wrote immediately in great agitation to his friend Petrarch, expressing his resolution to quit the world and shut himself up in a Carthusian convent. Petrarch's answer, which is among his Latin epistles, is remarkable for its sound and clear sense. Without ascribing much weight to the myste-

lopes his views of ancient politics, and makes frequent comparisons between them and the events of his own time. Spain is frequently alluded to in them. These commentaries, which also extend to the life of Agricola, were published in two volumes, 4to., 1678, under the title of *La Bilancia politica di tutte le Opere di Trajano Boccalini*, with notes by Louis du May. The notes are written with greater freedom than the text, especially on religious subjects, for which reason the work was put in the Index of forbidden books. The work contains, besides the commentaries, a number of letters on historical and political subjects, pretended to be written by Boccalini, and collected and published by Gregorio Leti, but which, it is believed, were written by Boccalini's son and by Leti himself conjointly.

Owing to his invectives against Spain, Boccalini, being afraid of the power of that government, took refuge at Venice, the only Italian state that kept itself comparatively independent of Spanish influence. He did not live there much more than one year, and died on the 16th November, 1613. It was said that he was murdered in his lodgings and in his own bed, by several hired assassins, who beat him to death with bags filled with sand. This however is disbelieved by Mazzuchelli, Zeno, Tiraboschi, and other Italian critics, who give several reasons for their dissent from this story. In the registers of the parish of Santa Maria Formosa, in which Boccalini died, it is stated that he died of the colic accompanied by fever. This statement in the registers however is but weak evidence against the alleged crime.

BOCCANE'RA, SIMO'NE, the first doge of Genoa, was elected by popular acclamation in 1339. Until that time the republic had been governed by two capitani chosen from among the patrician families, between whom frequent disputes occurred, they being divided into the factions of Guelphs and Guibelines. These disputes often terminated in bloodshed, banishment, and confiscation of property. The citizens of Genoa, tired of this, appointed a doge, or elective supreme magistrate, after the example of Venice. It was resolved at the same time that the doge should be chosen from among the private citizens, and not from any of the patrician families. The doges were appointed for life; but they were often driven from office by civil commotions. Boccanera himself was driven away in 1344, but returned some years after, and was reinstated. His son Battista was elected doge in 1400, but was soon after beheaded. The institution of the doges for life lasted till 1528. [See DOGE.]

BOCCHERINI, LUIGI, a name too familiar in modern musical history to be omitted here; yet, well as he was known, and highly and deservedly as he was valued, during the latter-part of the last century and the commencement of the present, his compositions have already fallen into neglect, and it is not unlikely that in a few years they will be entirely forgotten. He was born at Lucca, in 1740. His first instructions in music were from the Abbé Vanucci, and he subsequently studied composition generally, and the violoncello particularly, at Rome, whither his father, a performer on the contra-basso, sent him to finish his professional education. Some time afterwards, Charles IV. of Spain, a great connoisseur in music, engaged Boccherini as court composer, and during many years he lived in the sunshine of royal favour; but indiscreetly wounding the vanity of the royal dilettante, he was dismissed from his envied situation. About the same time Lucien Bonaparte, then ambassador at Madrid, took him under his protection, and settled on him a pension of a thousand crowns, on condition of his supplying him with six quintets every year. This reasonable appointment was willingly accepted, and the composer continued to reside in the Spanish capital till his death, which took place in 1806.

Boccherini produced little else besides quintets for two violins, viola, and two violoncellos, which are remarkable for sweetness, not boldness, of harmony, and gracefulness of melody; and, which renders them unlike all other compositions of the kind, he most commonly assigns the principal part to the first violoncello. Of these he composed no less than ninety-three, which were published after his decease by Janet and Cotelle. But the more elaborate, and undoubtedly the superior works of the same class, by Haydn, Mozart, and Beethoven, have completely superseded those of Boccherini, which are now rarely, if ever, heard.

BOCHART, SAMUEL, of the family *de Bochart Champigny, de la branche de Menillet*, became by his great learning the most distinguished member of his illustrious

family, although he did not enjoy such splendid titles as many of his relations. He was the son of a Protestant minister, and himself minister of a persecuted religious body. Etienne Seigneur de Menillet, son of Jean Bochart II., married Marie Blot, and had among other children Marc, *Président aux Enquêtes du Parlement de Paris*, who died childless; and René, minister of the reformed religion at Rouen, who married Esther du Moulin, sister of the famous Petrus Molinæus, or Pierre du Moulin, by whom he had Samuel, the subject of this notice, who was born in the year 1599.

When Samuel Bochart was thirteen years old he composed forty-four Greek verses, which Thomas Dempster, or Demsterus, under whom he studied the classics at Paris, prefixed to his 'Corpus Antiquitatum Romanarum,' in 1612. At that time Samuel Bochart probably lived with his uncle, Pierre du Moulin, at Paris. It is said that he read at an early age not merely the Hebrew Bible, but also the rabbinical commentators. Soon afterwards he studied philosophy at Sedan under the professor D. J. Smith, and defended his theses with great applause in 1615. These theses he dedicated, in some good verses, to his grandfather, Joachim du Moulin, who was pastor at Orleans, and to his uncle, Pierre du Moulin, then pastor at Paris. Several other specimens of his ready and elegant versification are still extant. He studied divinity probably at Saumur, under Caméro, or Caméron; and the Syriac, Chaldee, and Arabic under Capel. When Caméron escaped from the civil commotions to London in 1621, Bochart followed him and attended his private instructions. He went with Caméron to see King James I. dine. There he heard a reader, who read the 27th chapter of Ezekiel, in order to furnish the king with some matter for conversation at dinner. The king asked why, in v. 11, according to the versions of Aquila and the Vulgate, the *Pygmæi* were said to be watchmen over the towers of Tyre? One of the royal guests replied, that the name *Pygmæi* originated from the Greek *πυγμαί* (*peekhus*), *a cubit*, and he proved from Ctesias that the stature of the greatest of these dwarfs was two cubits, but of most of them only half a cubit. They said that these dwarfs were chosen for the defence of the towers of Tyre, in order to show the uncommon strength of the fortifications, which were so well constructed that no defenders were needed: other guests observed that the *Pygmæi*, in their constant warfare with the cranes, became especially wakeful and apt for town-defence: others proved that the *Pygmæi* were, according to Ctesias, good marksmen: others observed that the Hebrew text had **יְמַרְמְרִים**,

Gammadim, which signifies *fortes, audaces* (strong, bold), and that these *Gammadim* were, according to Pliny, a warlike nation of Phœnicia, who enlisted in the military service of Tyre. Caméro being asked his opinion, observed, that the *Pygmæi*, in Ez. xxvii. 11, were warriors or combatants, who derived their name from *πύγμαχος*, *pugil*, *one who fights with his πυγμή*, fist; which word is related to the Latin *pugnare* and *pugna*, with which Caméro compared the *Latin manus militaris* and the Greek *ἄρσενον*, the French *homme de main* and the English *armstrong*.

The king was pleased with Caméron's explanation, who was about to confirm his observations still more, when the king's fool, whose name was *Armstrong*, cast himself at Caméron's feet, thanking him for having proved the antiquity of the name of *Armstrong* by the holy authority of the prophet.

About this time Bochart visited Oxford, where he requested, in Latin, one of the dignitaries to show him a comfortable seat from which he might behold the taking of degrees. The doctor, who understood only the English pronunciation of Latin, replied, that the university was then rather poor, and that he could not offer much money, but he would help him with a little *viaticum*, which Bochart of course declined. After a short stay in England, Bochart went, towards the close of the year 1621, to Leyden, where he studied Hebrew and Arabic under Thomas Erpenius, and divinity under A. Rivetus, who had also married a sister of P. du Moulin. Rivetus dedicated his 'Catholicus Orthodoxus' to Bochart. It is said that Bochart learned the Ethiopic from Job Ludolf.

Having finished his studies at Leyden, Bochart returned home. His father was then dead, but his mother still survived. He was soon invited by the Protestants at Caen to accept among them the office of pastor, and he became a zealous and popular preacher, admired even by Roman Catholics. During the siege of Rochelle, a number of

Vistula, and on the east by the Dunayec, which separates it from the province of Tarnow: it is also traversed by the Raab or Raba. The soil is inferior in fertility to that of most other parts of the kingdom. It is less adapted for the plough than for rearing cattle, to which great attention is paid, while the cultivation of grain is neglected. The forests of Bochnia are of no little importance to its prosperity, but the principal source of its wealth is the salt-mines about the capital and in the vicinity of Wieliczka, whose total produce is between 37,000 and 40,000 tons per annum. Some iron is also raised among the Carpathians, and manufactured in the country; and a few linens are made. Bochnia also enjoys the benefit of some transit trade. It contains five towns, nine market-towns, and nearly 400 villages. In 1817 its population was 178,760 souls: it is at present estimated at about 205,000.

The capital, which bears the same name as the province, lies about a mile from the Raba, among a low range of hills which run as far as Wieliczka. It is moderately well built, has several churches, a gymnasium, a board of mining, an office for the direction of the saltworks, a head district-school and other seminaries, and is the seat of government for the circle.

The salt raised in the vicinity is the produce of a bed which spreads for 1000 lachter (about 1 1-7th miles), from east to west: its depth has not been ascertained beyond 720 feet. This great bed is intermixed with clay and gypsum. The saltmines here afford employment to 300 labourers, and yield about 12,500 tons annually.

Bochnia contains 660 houses, and about 5600 inhabitants, according to Hirschelmaun. It is in 49° 57' N. lat., 20° 23' E. long. To the west of it lies Wieliczka, the next town of importance in the province, with a population of 3500 souls, and extensive mines in its neighbourhood. The remaining three towns are, Wisnics, with a suburb set apart for the Jews, a castle, and a monastery of Carmelites; Woynicz, a small town near the banks of the Dunayec; and Podgorze, or Podhorze, a royal freetown on the Vistula, adjacent Cracow, and of modern construction: it contains about 340 houses and 2000 inhabitants, and has some linen manufactures, and an increasing trade. There is an iron-work, a manufactory of arms, chalk-pits, and flint-stones for fire-arms in the neighbourhood.

BOCHOLT-AAHAUS, a principality in the circle of Münster, in the Prussian province of Westphalia, which, together with the sovereignty of Anhalt, a domain in the same quarter, belongs to the prince of Salm-Salm, and contains an area of about 620 square miles, and about 57,000 inhabitants. [See SALM-SALM.] Bocholt, on the Aa, in the above-mentioned circle, is the residence of the princes; and possesses an orphan asylum, a large asylum for the poor, a silk manufactory employing 420 looms, a brandy distillery, cotton and soap manufactories, &c. Much grain is cultivated round it, and there is an iron-factory in its neighbourhood. The town contains two Roman Catholic churches, 718 houses, and about 4300 inhabitants. It is situated in 51° 50' N. lat., 6° 35' E. long.

BOCLAND, land held by book or charter. The two great distinctions of lands in the Anglo-Saxon times were those of boc-land and folc-land. The former means land which had been severed from the folc-land, and converted into an estate of perpetual inheritance. Folc-land, on the other hand, was the property of the community. Sir Henry Spelman describes folc-land as 'terra popularis, quæ jure communi possidetur—sine scripto. (*Glossar. v. Folcland*.) In another-place (*v. Bocland*) he says, 'Prædia Saxones duplici titulo possidebant: vel scripti autoritate, quod Bocland vocabant—vel populi testimonio, quod Folcland dixerent.'

The author of a *Dissertation on the Folclande and Boclande of the Saxons*, 4to., Lond. 1777, p. 12, says, 'the Boclande and Folclande are first discovered in an ordinance of Æthelbert, which informs us that the country was divided into two portions, one of them more immediately appertaining to the King and his Thains, the other under the jurisdiction of the Earl, who was annually elected by the freemen of every shire, and was denominated Eorl, Ealdorman, or Gerefa, and in latter times Greve, or Reve; he it was that convened the Folcmote, which was composed of the possessors of Folclande, and together with the bishop administered the oath of allegiance to the freemen, over whom he presided when they sat in their judicial capacity, and whose decrees it was his duty to enforce.'

Mr. Allen, in his *Inquiry into the Rise and Growth of*

the Royal Prerogative in England, 8vo., Lond. 1830, goes more at length into this subject: he says that Bocland might belong to the church, to the king, or to a subject. It might be alienable and devisable at the will of the proprietor. It might be limited in its descent, without any power of alienation in the possessor. It was often granted for a single life or for more lives than one, with remainder in perpetuity to the church. It was forfeited for various delinquencies to the state. Bocland, moreover, was released from all services to the public, except those which were comprised in the phrase 'trinoda necessitas,' which were said to be incumbent on all persons: these were the contributing to military expeditions, and to the reparation of castles and bridges. Bocland also might be held by freemen of all ranks and degrees. A ceorl might possess bocland and perform for it military service to the state. If he had five hides of bocland with the other requisites demanded by law, he was entitled to the privileges of a thegn. (See Wilkins's *Leg. Anglo-Sax.* pp. 70, 71.) Gesiths (companions or partners) might receive grants of bocland. (Hickes, *Gramm. Anglo-Sax.* p. 139. Bedæ, *Hist. Eccl. cura Smith*, p. 786.) Thegns might also possess bocland. But the estate of a thegn in bocland must not be confounded with the thegn-lands which he held, by a beneficiary tenure from the king or from a private lord, for military service. Thegn-lands held of the king or state are repeatedly mentioned in Domesday; and the Saxon laws carefully distinguish the bocland possessed by a thegn, from the land given him by his hlaford (or lord). (See *Leg. Can.* p. 75.) It is probable that thegn-lands were originally granted for life, as beneficiary lands were on the continent; but before the end of the Saxon period, the possessions given to a man by his hlaford descended in certain cases to his children. (*Ibid.*) The estates of the higher nobility consisted chiefly of bocland. Bishops and abbots might have bocland of their own, in addition to what they held in right of the church. The Anglo-Saxon kings had private estates of bocland; and these estates did not merge in the crown, but were devisable by will, alienable by gift, or sale, and transmissible by inheritance in the same manner as bocland held by a subject.

Offa, king of the Mercians, had a hundred and ten castles of land in Kent converted into bocland for himself and his heirs, with remainder to the church. These lands did not descend, after the death of his son Ecgferth, to Cynwulf, his successor in the Mercian throne, but to Cyndrihta, abbess of Cotham. Other lands, of which he had possessed himself without a legal title, went also to Cyndrihta and not to his successors in Mercia. (Wilkins, *Concil.* vol. i. p. 163.)

When bocland was created, the proprietor, unless fettered by the original grant, or by a subsequent settlement of the estate, appears to have had an unlimited power to dispose of it as he chose. (Somner's *Gavelkynd*, pp. 88, 89.) In the exercise of that power he might transfer it by grant or bequeath it by will, in such quantities, for such periods, and on such conditions as he was pleased to appoint. If conveyed by a written instrument, whatever might be the stipulations annexed to the grant, the land was still denominated bocland. (See Heming's *Chartul.* pp. 129, 140, 141, 180, 182, 195, 206. Smith's *Bede*, pp. 769, 771.) When once severed from the folcland, or property of the community, an estate retained the name of bocland, whatever were the burthens and services imposed on it, provided it was alienated by deed. When transferred in a different manner, though held on the same conditions, it seems to have been called *lænland*. This appears from a transaction recorded in the Chartulary of Worcester. (Heming, p. 158, see also *ibid.*, pp. 204, 205.) We are there told that archbishop Oswald granted to Ælfsige a tenement in Worcester, with the croft attached to it, for three lives, to be held as amply in the form of bocland as it had been held before in the form of lænland. Lænland might be an estate for life, or it might be held at will; and if the possessor was convicted of felony, it reverted to the donor. (Compare Hickes, *Diss. Epist.* pp. 58, 59; *Textus Roffensis*, pp. 115, 116; Heming, p. 94; *MS. Ch. Ch. Cant.*)

Bocland, says Mr. Allen, when alienated by grant or will, might be free, or in the seignory of some church, manor, or individual. (Hickes, *Diss. Epist.* p. 62; Heming, pp. 96, 384; Somner, *Gavelkynd*, pp. 205, 206; Smith's *Bede*, p. 782.) It might be subjected to payments in kind or in money. (Hickes, *ut sup.* pp. 10, 55, *Gramm. Anglo-Sax.* pp. 140,

142; Lye, *Dict.* App. ii. 1, 2, 3, 5, &c.) It might be liable to services, free, servile, or mixed. (Heming, pp. 134, 184, 189, 292. *Domesd.* tom. i. fol. 269 b.) It might be granted on the condition that the possessor discharged the military or other services due by the proprietor to the state. (Heming, pp. 81, 96, 232, 265; Smith's *Bede*, pp. 773, 778, 779, 780.) It might be let for annual rent or for the performance of menial offices. (Heming, pp. 264, 267, 230.) It might be held for lives or at will; (Smith's *Bede*, p. 770, &c.; Lye, App. ii. 1, &c.) for services certain or indefinite, or with no reservation of services whatever. (Madox, *Formulare*, cxxv; Hicke's *Gramm.* p. 141; Smith's *Bede*, p. 779.) Tenants of bocland might be persons of the same description with the lowest and most dependent of the occupiers of folcland. The only difference between them seems to have been, that the tenants of folcland held their lands directly from the public authorities of the state, while the others held their land of some proprietor, to whom it had been previously granted as a private inheritance. The villain of later times and the copyholder of the present day are not derived from the one more than from the other.

Bocland might be forfeited for various offences, and when forfeited, it escheated to the king as the representative of the state. (*Leges Æthelredi Regis*, 2; *Leg. Cnuti*, 12. 75; *Text. Roff.* pp. 44, 136; Hicke's *Diss. Ep.* p. 114; Gale, tom. i. pp. 484, 488.) Land held of a subject, when forfeited for the same delinquency, escheated to the lord. (*Leg. Cnuti*, 75; *Judic. Civ. Lond.* Wilk. p. 65.) When bocland was granted on lives, it was usual to insert a clause in the charter, declaring that whatever offence the tenant might commit, his land should revert without forfeiture to the grantor. (Heming, pp. 96, 126, 128, 131, 146, 161, 184, &c.; *Monasticon Angl.* new edit. vol. iii. p. 37.)

From the view that has been taken of the distinction between folcland and bocland, it follows that the folcland, or land of the community, like the fisc of the continental nations, was the fund out of which the boclands, allodial possessions or estates of inheritance, were carved. At what time the folcland, or land of the public, began to be converted into bocland we are not informed. It was probably soon after the establishment of the Saxons in England; for though a more rude and uncultivated people than the nations which had enjoyed greater opportunities of intercourse with the Romans, they must have found private property in land among the Britons whom they expelled or subdued, and could not long remain insensible to the advantages arising from it. Certain it is, that in one of the earliest charters giving land to the church, it is implied, though not expressly asserted in the grant, that the land contained in the donation had been previously the private property of the donor. (Between A.D. 665 and 694, see Smith's *Bede*, p. 748.) But though commenced at an early period, the conversion of folcland into bocland seems to have been slowly and gradually effected. Every charter creating bocland is a proof that the land had formerly been folcland. A charter of Archbishop Wilfred, who died about 830, asserts in direct terms, that the land which he gives away had never been any man's bocland before it became his, and appeals to general practice, whether a proprietor of bocland might not sell it or dispose of it as he pleased. (Somner's *Gavelkynd*, p. 88.) In a charter of Burhred, king of the Mercians, the land he grants to an individual is said to have been the property of the kingdom before the donation was made. ('Ego Burfred, cum consensu et consilio seniorum meorum, libenti animo concedens, donabo aliquam partem agri regni mei.' Smith's *Bede*, p. 770.) Burhred was king of the Mercians from 852 to 874.

Folcland being the property of the community, could not be converted into bocland except by an act of government. In early times this was probably done in the gemot or public assembly of the tribe, as temporary allotments to individuals were made in the gemot or assembly of the district. But when the king came to be considered as the representative of the state, all charters of bocland ran in his name, and appeared to emanate from his bounty. The power of creating allodial property, by which was meant an estate of inheritance, is enumerated in the *Textus Roffensis* among the prerogatives of the crown. (*Text. Roff.* cap. xxvii. p. 44.) But though bocland could not be created without the authority of the king, it was not in his power to convert folcland into bocland without the consent of his witan, principes, seniores, optimates, magnates, or other persons, by whatever name they were called, who assisted

him in the administration of his kingdom. There is hardly a Saxon charter creating bocland which is not said to have been granted by the king with consent and leave of his nobles and great men. If that consent was withheld, his grant was invalid. In the proceedings of a council held at Kingston-upon-Thames by Egbert, we are told that his predecessor, Baldred, king of the Kentish men, had given to Christ Church, Canterbury, the manor of Mallings in Sussex; but that prince, it is added, having offended his nobles, they refused to ratify his grant, which had therefore remained without effect. (Wilkins, *Concil.* vol. i. p. 178; Somner's *Gavelkynd*, p. 114.) In conveyances of bocland on lives, the consent of the king or of the superior lord is oftentimes mentioned by the proprietor, but is frequently omitted.

When the king became the representative of the state, the folcland, or land of the public, began to be called and considered his property. It was his land in the same sense that the servants of the public were his servants, the laws his laws, and the army his army. In his politic capacity he was the state, and whatever belonged to the state belonged to him. If folcland was assigned to any one for life, or for a shorter term, it was given by his authority, and apparently for his service. When it was converted by charter into bocland, or land of inheritance, the deed was executed in his name, and though the grant was of no validity without the concurrence of his witan, the donation seemed in form the spontaneous act of his munificence.

In fact, there seems but little doubt that the folcland of our Saxon ancestors, which, in contradistinction to bocland, has so long puzzled English antiquaries, was no other than the public land, which in the lapse of time ultimately received another appellation, that of terra Regis, or crown land. In the original returns of the Exon Domesday, p. 75, the terra Regis of Devonshire is termed demesne land of the king belonging to the kingdom. The term Bocland, as has been already noticed, was appropriated to such portions as from time to time had been severed from it, and granted out by written instrument.

It is remarkable, that in the Domesday Survey the term Bocland occurs but once in its proper acceptation (*Domesd.* tom. i. fol. 11 b.): though as the name of a place it frequently occurs. (See Ellis's *General Introd. to Domesd. Book*, vol. i. p. 230, note.) Mr. Allen, *Inquiry, &c.*, p. 154, observes that numerous entries in Domesday distinguish lands which in Saxon times must have been bocland into free lands and lands in seignory. (See *Domesd.* tom. i. fol. 72 a, col. 2. 80, a. col. 1. 84 b. col. 2. &c.)

Exclusive of the works already quoted, the reader may refer for less definite opinions to Dalrymple's *Essay towards a general History of Feudal Property in Great Britain*, 8vo. Lond. 1759, and to a *Discourse on the Bocland and Folklund of the Saxons*, in refutation of Dalrymple, 8vo. Camb. 1775.

BODENSEE. [See CONSTANCK, LAKE OF.]

BODLEY, SIR THOMAS, from whom the Bodleian or public library at Oxford takes its name, was the eldest son of Mr. John Bodley of Exeter, by Joan, daughter and heiress of Robert Home, Esq., of Ottery St. Mary. By his father's side he was descended from the ancient family of the Bodleys or Bodleighs of Dunscombe near Crediton. He was born at Exeter, March 2nd, 1544. He was about twelve years of age when his father, being obliged to leave England on account of religion, settled with his family at Geneva, where he lived a voluntary exile during the reign of Queen Mary. In that university, then newly erected, young Mr. Bodley applied himself to the study of the learned languages and divinity under the most celebrated professors. He frequented the public lectures of Chevalierus on the Hebrew tongue, of Beroaldus on the Greek, and of Calvin and Beza on divinity, and had also domestic teachers in the house of Philibertus Saracenus, a physician of that city, with whom he boarded, where Robert Constantine, author of the Greek Lexicon, read Homer to him. Upon the accession of Queen Elizabeth, in 1558, he returned to England with his father and family, who settled in London, and was soon after sent to Magdalen College, Oxford, where he was placed under the tuition of Dr. Humphrey, afterwards president of that society. In 1563 he took the degree of B.A., was chosen probationer of Merton College the same year, and the year following was admitted fellow. In 1566 he took the degree of M.A., and in the same year

read natural philosophy in the public schools. In 1569 he was elected one of the proctors of the university, and after that, for a considerable time, supplied the place of university orator. Hitherto Mr. Bodley had applied himself to the study of various faculties without any inclination to profess any one more than the rest. In 1576, being desirous to improve himself in the modern languages, and to qualify himself for public business, he began his travels, and passed nearly four years in visiting France, Germany, and Italy. Afterwards, returning to his college, he applied himself to the study of history and politics. In 1583 he was made gentleman usher to Queen Elizabeth, and in 1585 married Anne, daughter of Mr. Carew of Bristol, and widow of Mr. Ball, a lady, as Wood informs us, of considerable fortune. Soon after, he was employed by Queen Elizabeth in several embassies to Frederic King of Denmark, Julius Duke of Brunswick, William Landgrave of Hesse, and other German princes, to engage them to join their forces with those of the English for the assistance of the King of Navarre, afterwards Henry IV. of France; and having discharged that commission, he was sent to King Henry III., at the time when that prince was forced by the Duke of Guise to quit Paris. This commission, he himself tells us, he performed with extraordinary secrecy, not being accompanied by any one servant (for so he was commanded), nor with any other letters than such as were written with the queen's own hand to the king, and some select persons about him. 'The effect,' he continues, 'of that message it is fit I should conceal; but it tended greatly to the advantage of all the Protestants in France, and to the duke's apparent overthrow, which followed soon upon it.' In 1588 Mr. Bodley was sent to the Hague to manage the queen's affairs in the United Provinces, where, according to an agreement between the queen and the States, he was admitted one of the Council of State, and took his place next to Count Maurice, giving his vote in every proposition made to that assembly. In this station he behaved greatly to the satisfaction of his royal mistress and the advancement of the public service. A more particular account of his negotiations with the States may be seen in Camden's 'Annals of Queen Elizabeth,' under the year 1595, and in a short piece written by Mr. Bodley himself, and published by Hearne in his notes upon that passage of Camden entitled 'An Account of an Agreement between Queen Elizabeth and the United Provinces, wherein she supported them, and they stood not to their Agreement.' After nearly five years' residence in Holland, Mr. Bodley obtained leave to return into England to look after his private affairs, but was shortly afterwards remanded back to the Hague. About a year afterwards he came into England again, to communicate some private discoveries to the queen, and presently returned to the States for the execution of those counsels which he had secretly proposed. At length, having succeeded in all his negotiations, he obtained his final recall in 1597. After his return, finding his advancement at court obstructed by the jealousies and intrigues of the great men, he retired from it and from all public business, and never could be prevailed with to return, or to accept any new employment. In the account of his own life he has minutely detailed the particulars of the rivalry between the Earl of Essex and the Cecils, which caused his disappointment. In the same year he set about the noble work of restoring or rather founding anew the public library at Oxford, which was completed in 1599. After King James's accession to the throne, Sir Thomas Bodley received the honour of knighthood. He died the 28th of January, 1612, and was buried with great solemnity at the upper end of Merton College choir. Sir Thomas Bodley wrote his own life to the year 1609, which, together with the first draught of his statutes for his library, and a collection of his letters, were published from the originals in the Bodleian by Thomas Hearne under the title of 'Reliquiæ Bodleianæ, or some genuine Remains of Sir Thomas Bodley,' 8vo. Lond. 1703. The Life alone had been previously published in 4to. Oxford, 1647. (See the *Reliquiæ Bodleianæ*; *Biographia Britannica*, Kippis's edition, vol. ii. p. 388-393; Chalmers's *Biogr. Dict.* vol. v. p. 468-484.)

Materials exist for an extended Life of Sir Thomas Bodley, in his public capacity, in several of our libraries; more especially in the Cottonian and Harleian collections of manuscripts in the British Museum, and among the Bacon papers in the Archiepiscopal Library at Lambeth. Sir Thomas Bodley's original draft for the Statutes of his Library will be found in the Reliquiæ Bodleianæ.

BODLEYAN, or BODLEIAN LIBRARY, the Public Library of the University of Oxford, founded in 1597 by Sir Thomas Bodley, in the very year in which he retired altogether from public employment.

The first public library in Oxford was established in what was then called Durham (since Trinity) College, by Richard de Bury, or Aungerville, bishop of Durham and lord treasurer of England, in the time of Edward III. He died in 1345, and left his books to the students of Durham College, who preserved them in chests, until the time that Thomas de Hatfeld, his successor in the see of Durham, built the library in 1370. Chalmers, however, in his *History of the Colleges, Halls, and Public Buildings of Oxford*, vol. ii. p. 458, says, it is not very clear whether this was a public library in the usual meaning of the term, or one restricted to the use of the monks of Durham College only.

The next we read of was called Cobham's Library, which would have been the first, if Thomas Cobham, bishop of Worcester, had lived to have executed his own purpose. About the year 1320 he began to make some preparations for a library over the old Congregation-House, in the North Church-yard of St. Mary's; but, dying soon after, little progress was made in the work till 1367, when his books were deposited in it, and the scholars permitted to consult them on certain conditions. But the property of the site being contended between the University and Oriel College, the dispute was not finally determined till 1409, when the room was fitted up with desks, windows, &c., by the benefactions of King Henry IV., of his four sons Henry, Thomas, John, and Humphrey, of Thomas Arundel archbishop of Canterbury, Philip Repindon bishop of Lincoln, Edmund earl of March, and Richard Courtney chancellor of the university, in whose time it was completed about the year 1411. This appears to have been the first Public Library, and continued in use until 1480, when the books were added to Duke Humphrey's collection, for the reception of which a library-room had been completed.

Humphrey, surnamed the Good Duke of Gloucester, a man superior to the age in which he lived, was the real founder of the library which was afterwards restored and re-founded by Sir Thomas Bodley. The number of books given by Duke Humphrey is variously represented. Wood (*Hist. and Antiq. of the Univ. of Oxford*, vol. ii. pt. ii. 4to. Oxf. 1796, p. 715) says the different treatises amounted to six hundred: one only specimen at present remains, a manuscript in folio of Valerius Maximus, enriched with the most elegant decorations, and written in Duke Humphrey's age, evidently with the design of being placed in his sumptuous collection. The rest of the books, which, like this, being highly ornamented, and looking like missals, were supposed to convey ideas of Popish superstition, were destroyed or removed by the visitors of the university in the time of Edward VI., whose zeal was equalled only by their ignorance. A manuscript commentary on Genesis, by John Capgrave, belonging to Duke Humphrey's library, is still preserved in that of Oriel College, Oxford; and one, if not more manuscripts, formerly belonging to the collection, are in the British Museum; most of them, at the end, had usually this inscription written in the duke's own hand, 'C'est livre est a moy Humfrey Duc de Gloucestre.' Before the year 1555 the Duke of Gloucester's Library was totally despoiled of its contents, and the desks and benches ordered to be sold; the room continued empty until restored by Sir Thomas Bodley.

It was in 1597 that, as Camden justly observes, Sir Thomas Bodley set himself a task which would have suited the character of a crowned head—the restoration of the Public Library. With this view he sent a letter from London to the vice-chancellor Dr. Ravis, dean of Christ Church, offering to restore the building, and settle a fund for the purchase of books, as well as the maintenance of proper officers. This offer being gladly accepted, he commenced his undertaking by presenting a large collection of books purchased on the continent, and valued at 10,000*l.* Other collections and contributions were sent in, by his example and persuasions, from various noblemen, clergymen, and others, to such an amount, that the old building was no longer sufficient to contain them. He then proposed to enlarge the building; and the first stone of the new foundation was laid with great solemnity, July 17, 1610, and so amply promoted by his liberality, as well as by the benefactions of many eminent persons, that the University was enabled to add three other sides, forming the quadrangle and rooms for the

schools, &c. He did not however live to see the whole completed, as the time of his death, already recorded, will explain.

When Sir Thomas Bodley had succeeded in enriching his collection, probably far beyond his expectation, he drew up a body of statutes, which have been since incorporated with those of the university. According to them, the librarian is to be a graduate, unmarried, and without cure of souls; and to be allowed deputies or assistants. One or two points in these regulations have been since altered; the librarian is allowed to marry, and he can hold parochial preferment with his librarianship. The revenues for the maintenance of the library are intrusted to the vice-chancellor and proctors for the time being; and the vice-chancellor and proctors, the three professors of divinity, law, and physic, and the two regius professors of Greek and Hebrew are appointed visitors.

The first catalogue of the printed books of the Bodleian was published in 4to. in 1605, by Dr. Thomas James, Sir Thomas Bodley's first librarian. It was dedicated to Henry Prince of Wales; and the books were classed in four faculties, divinity, medicine, jurisprudence, and arts, completed by an index of authors' names. A more extensive catalogue, in an alphabetical form, was published by Dr. James in 4to., Oxford, 1625; and another catalogue, which had been compiled by him, of works in the Bodleian, printed and manuscript, in interpretation of the Scriptures, was printed in a thin 4to. at Oxford in 1635. 'A Nomenclator of such Tracts and Sermons as have been printed or translated into English upon any place or books of Holy Scripture; now to be had in the most famous Library of Sir Thomas Bodley in Oxford,' was also printed in 18mo. in 1642, by John Veneuil.

In 1674 a new catalogue of the printed books of the Bodleian was published in a folio volume, under the care of Dr. Thomas Hyde; and another of the manuscripts, distinguishing the different collections, was inserted in the general Catalogue of the Manuscripts of England, folio, 1697. A still more extensive Catalogue of the Printed Books was published in two volumes in folio, in 1738, which was thought so sufficiently perfect in its day, that almost every college library in the university had a copy interleaved, to mark off the books in the catalogue which they themselves possessed, and to insert additions. This is the last general catalogue which has been published of the books in the Bodleian Library; but from the immense increase of the collection it has become but of little use. Another was undertaken a few years ago, and had proceeded, under the direction of the present librarian, Dr. Bandinel, to some extent in the printing; but we are informed that the publication has been since abandoned.

A few catalogues of particular portions of the Bodleian collections have been published at different times. Dr. Uri printed the first part of a catalogue of the oriental manuscripts in folio, in 1787; which was continued in 1821, in a catalogue of the Arabic manuscripts, prepared by Mr. afterwards Dr. Alexander Nicol. After the acquisitions made at the Pinelli and some other sales, a small octavo volume, entitled 'Notitia Editionum quoad libros Hebr. Gr. et Lat. quæ vel primariæ, vel Sæc. xv. impressæ, vel Aldinæ, in Bibliotheca Bodleiana adservantur,' was published in 1795; another catalogue, entitled 'Codices Manuscripti et Impressi, cum Notis Manuscriptis, olim D'Orvilliani, qui in Bibliotheca Bodleiana adservantur,' was printed by Mr. Gaisford, since dean of Christ Church, in 4to. 1806; and the first part of another catalogue, of the manuscripts collected in the East by Dr. E. D. Clarke, and purchased from him for the Bodleian, was published also by Mr. Gaisford in 4to. 1812; followed by a second part in 1815, containing the Oriental MSS., edited by Mr. Nicol. In 1814, a catalogue of the books relating to British (including Welsh, Scottish, and Irish) topography, and Saxon and northern literature, bequeathed by Richard Gough, Esq., was printed at the Clarendon press by Dr. Bandinel. The curators of the Bodleian have for many years published, or rather printed and distributed, and continue to print and distribute, annual alphabetical catalogues of its acquisitions in the department of printed books, for the information of the university.

A catalogue of the coins in the cabinet of the Bodleian was published by Mr. Francis Wise in 1750, in folio, illustrated by numerous plates, under the title of 'Catalogus Nummorum Antiquorum in Seriniis Bodleianis reconditorum, cum Commentario.'

An annual speech in praise of Sir Thomas Bodley was founded in 1681, by Dr. John Morris, canon of Christ Church; the speaker to be nominated by the dean of Christ Church, and confirmed by the vice-chancellor. These speeches are delivered at the visitation-day of the library, November the 8th.

It would require a volume to enumerate the many important additions, in books and manuscripts, made to this library by its numerous benefactors, or to give even a superficial sketch of its ample contents in every branch of science and learning. Among the earliest benefactors were Robert Devereux Earl of Essex, Thomas Sackville Lord Buckhurst and Earl of Dorset, Robert Sidney Lord Sidney of Penshurst, Viscount Lisle and Earl of Leicester, George Carey Lord Hunsdon, William Gent, Esq., Anthony Browne Viscount Montacute, John Lord Lumley, Philip Scudamore of London, Esq., and Lawrence Bodley, younger brother to the founder. The contributions of all these persons were made before the year 1600.

In 1601 collections of books and manuscripts were presented by Thomas Allen, some time fellow of Trinity College, Thomas James, the first librarian, Herbert Westphaling bishop of Hereford, Sir John Fortescue, knight, Alexander Nowell dean of St. Paul's, John Crooke recorder of London and chief-justice of the Common Pleas, and Nicholas Bond, D.D., president of Magdalen College.

The most extensive and important collections however are those of the Earl of Pembroke, the celebrated Mr. John Selden, Archbishop Laud, Sir Thomas Roe, Sir Kenelm Digby, General Fairfax, Dr. Marshall, Dr. Barlow bishop of Lincoln, Dr. Richard Rawlinson, Mr. St. Amand, Bishop Tanner, Browne Willis, Thomas Hearne, Mr. Nathaniel Crynes, and Mr. Godwin. The library bequeathed by Richard Gough, Esq., which came to the Bodleian in 1812 (the catalogue of which has been already noticed), is perhaps the most perfect series of English topographical works ever formed, and is particularly rich in topographical manuscripts, prints, drawings, and books illustrated by the manuscript notes of eminent antiquaries. The last collections of great importance bequeathed to the Bodleian have been those of Edmond Malone, Esq. in 1812, and of Francis Douce, Esq. in 1834.

The Bodleian Library was first opened to the public on November 8th, 1602, and by the charter of mortmain obtained of King James, Sir Thomas, then lately knighted by him, was declared founder; and, in 1605, Lord Buckhurst earl of Dorset and chancellor of the university, placed the bust of Sir Thomas in the library. Since the year 1780 a fund of more than 400*l.* a year has been established for the purchase of books. This arises from a small addition to the matriculation fees, and a moderate contribution annually from such members of the university as are admitted to the use of the library, or on their taking their first degrees: to which is to be added the privilege claimed as a matter of right under the copyright act of a copy of every book printed in Great Britain and Ireland.

The principal librarians since the foundation by Sir Thomas Bodley have been, 1. Thomas James, fellow of New College, 1598; 2. John Rouse, fellow of Oriel, 1620; 3. Thomas Barlow, fellow, afterwards provost of Queen's, bishop of Lincoln, 1653; 4. Thomas Lockey, student and afterwards canon of Christ Church, 1660; 5. Thomas Hyde, of Queen's College, afterwards Laudian professor of Arabic, regius professor of Hebrew, and canon of Christchurch, 1665; 6. John Hudson, of Queen's, afterwards principal of St. Mary Hall, 1701; 7. Joseph Bowles, fellow of Oriel, 1719; 8. Robert Fysher, fellow of Oriel, 1729; 9. Humphrey Owen, fellow and afterwards principal of Jesus College, 1747; 10. John Price, B.D. of Jesus College, afterwards of Trinity, 1769; 11. Bulkeley Bandinel, D.D. late fellow of New College, 1813, the present librarian.

All members of the university who have taken a degree are admitted to study in the library: no books have ever been suffered to be taken from it. Literary persons, either native or foreign, are also allowed, on being properly recommended, to read and take extracts from the books in this collection. By the provisions of a statute promulgated and confirmed in full convocation, Dec. 2, 1813, the officers of the library were increased to a principal librarian, two under-librarians, with the degrees of M.A. or B.C.L. at least, and two assistants, either B.A. or Under-graduates. The library is open between Lady-day and Michaelmas from nine in the morning till four in the afternoon; and during

the other half-year from ten till three. It is closed on Sundays and state holidays; from Christmas-eve to the 1st of January inclusively; on the feast of the Epiphany; from Good-Friday to Easter Tuesday inclusively; on the days of *Encœnia* and commemoration; seven days immediately following the 1st of September, and eight days preceding the visitation of the library. On all other holidays it is opened immediately after the university-sermon. (See the *Reliquiæ Bodleianæ*, 8vo. London, 1703; Wood's Account of Bodley's Library, *Hist. and Antiq. of the University of Oxford*, 4to. 1796, vol. ii. P. ii. p. 920-953; Chalmers's *History of the Colleges, Halls, and Public Buildings attached to the University of Oxford*, vol. ii. p. 458-464; *Oxford University and City Guide*, 8vo.; and the *Oxford University Calendar for 1835*.)

BODMER, JOHANN JACOB, the son of a clergyman, was born at Zürich in July, 1698. He applied himself particularly to the study of history and to poetry. Bodmer was struck with the want of national character in the German literature of his time, of the school of Gellert, Weiss, &c., the style and manner of which were heavy imitations of the French. Bodmer and his friend Breitinger began publishing a series of critical articles on the subject, which were violently opposed by Gottsched, the Aristarchus of Germany in those days, who treated the two Swiss critics with great superciliousness. This controversy, which was carried on for years, and filled up a number of pamphlets and journals, ultimately effected a complete revolution in German literature. Several young and gifted writers embraced Bodmer's views, and a new and true German school was formed, which produced Klopstock, Lessing, Schiller, Goethe, and a host of others.

Bodmer was deeply read in the Greek and Latin, as well as in the English poets, and he translated Homer and Milton into German. He published in 1758 a collection of the Minnesinger, or old German romantic poets, from a MS. in the Royal Library at Paris. Benecke has since published an improved edition of this collection under the title of 'Minnelieder, ergänzung der Sammlung von Minneüngern,' Göttingen, 1810. Bodmer published the 'Helvetische Bibliothek,' Zürich, 1735-41, which is a collection of tracts relative to the history of Switzerland. He also wrote a poem in twelve cantos on the Deluge, which was translated into English under the title of 'Noah,' by J. Collyer, London, 1767. Bodmer filled for fifty years the chair of literature in the Academy of his native town, Zürich.

He died at a very advanced age in January, 1783. In the latter part of his life he was considered as the patriarch of German literature, and he took a delight in directing and encouraging young men in their studies. His books and MSS. he bequeathed to the National Library of Zürich. His correspondence was published, together with that of his countryman Solomon Gessner, by Körte, Zürich, 1804.

BODMIN, a borough and market-town in the hundred of Trigg and county of Cornwall, 20½ miles S.W. by W. from Launceston, and 23¼ W.S.W. from London. The parish, which includes the borough, contains 6310 English statute acres, and the borough itself 2840 acres. The bounds are surveyed once a year, and a record of the perambulations is preserved.

Bodmin or Bodman, in Cornish *Bosvenna* or *Bosuenna*, 'the Houses on the Hill,' and in some of the ancient charters called *Bosmana* and *Bodminian*, 'the Abode of the Monks,' owes its origin to the circumstance of St. Petroc's having taken up his abode in the valley now occupied by the present town, about the year 520. That saint, to whom St. Guron (a solitary recluse) had resigned his hermitage, greatly enlarged it for the residence of himself and three other devout men, who accompanied him with the intention of leading a monastic life according to the rules of St. Benedict. St. Petroc, who died about the middle of the sixth century, was buried here, and according to William of Worcester and Leland, his shrine was preserved in a small chapel to the east of Bodmin church. Leland in speaking of it says, 'The shrine and tumb of St. Petrock yet standith in thest part of the churche.' The hermitage was inhabited by Benedictine monks till 936, when King Athelstan founded a priory near the spot of the old hermitage. This monastery soon fell into disuse, and its large possessions were seized by Robert, earl of Moreton and Cornwall, and after the death of his son William they became the property of the crown. After having passed through various hands,

and been alternately inhabited by Benedictine and St. Augustine monks, nuns, and secular priests, it was granted to one Algar,* who with the licence of William Warlewast, bishop of Exeter, refounded the monastery in 1125, and filled it with Austin canons, who continued in it till the dissolution of monasteries in the reign of Henry VIII. when its revenue amounted, according to Dugdale, to 270*l.* 0*s.* 11*d.*, and according to Speed to 289*l.* 11*s.* 11*d.* The last prior was Thomas Vivian, alias Wannynworth: an award in his time shows that the convent received considerable benefit from the tin works in the neighbourhood. Among other privileges the prior held a market and a fair, and possessed a pillory, gallows, &c., from the latter of which we may fairly presume that he had the power of inflicting capital punishment. The site of the monastery, with its large demesnes and dependencies, was granted to Thomas Sternhold, one of the first translators of the Psalms of David into English metre, and was subsequently purchased by some of the Rashleigh family. Dr. Borlase, Carew, and many other eminent antiquarians, have, and not without some foundation, supposed that Bodmin was the primary seat of the bishops of Cornwall, and that this honour was conferred on it in 905, when the bishops made it their residence till the end of the year 981, at which date the town and church having been burned and sacked by the Danes, they removed to St. German's. But the fallacy of this supposition has been satisfactorily proved by Mr. Whitaker in his 'Ancient Cathedral of Cornwall historically surveyed,' in which work he shows that the see was founded as early as 614, and that St. German's was made the original seat of it, though he asserts, on the authority of a grant from King Ethelred, that the monastery of Bodmin was annexed to St. German's, and that both these places continued to give a title to future prelates until the annexation of the bishopric of Cornwall to that of Crediton in Devon in 1031, about twenty years after which time Exeter was made the head of the diocese. The same writer also states that it was another religious house dedicated to St. Petroc at Padstow that was burnt by the Danes. An imperfect impression of the abbey seal is attached to the surrender preserved in the Augmentation Office. In its area the Virgin and infant Jesus and St. Petroc are represented under canopies of Gothic tracery, with the words 'S. Maria et S. Petroc,' below them. The word *Bodmyn* is all that is left of the legend which went round. (Dugdale's *Monasticon*.)

Bodmin is said to be one of the towns which had the power of stamping tin; but it seems that the privilege was lost before 1347, for in that year the burgesses petitioned parliament, complaining that although they were authorized to deal in all kinds of merchandise, yet they were hindered by the prince from buying or coining tin. They were unsuccessful in their application, and their petition was dismissed. Some centuries ago Bodmin must have been a place of considerable extent, for we find that in 1351 no less than 1500 persons died of the pestilence. William of Worcester, who visited Cornwall in the reign of Edward IV., speaks of this as recorded in the registry of the friars, and at the same time he adds that, during that same year, there died in various parts of the world 13,883 persons of the order of friars. Bodmin was one of those decayed towns, to repair which an act was passed in the 32d of Henry the Eighth.

In 1496, Perkin Warbeck, the pretended Duke of York, landed in Cornwall, and assembled here a force of 3000 men, with which he attacked the city of Exeter. A serious insurrection of the Cornishmen took place in 1498, when Thomas Flamme, a lawyer, and Michael Joseph, a farrier, of this town, were chosen leaders. These two men joined their forces to those of Lord Audley at Wells in Somersetshire, and marched with this nobleman as far as Eltham in Kent, where there was then a royal palace; but the insurgents were defeated by the king's troops at the battle of Blackheath, and their leaders, Lord Audley, Flamme, and Joseph, were executed.

In 1550, in the reign of Edward VI., the Cornish rebels superstitiously attributing the depression of trade and agriculture to the Reformation, assembled to the number of 10,000, and placing themselves under the command of Humphrey Arundel, governor of St. Michael's Mount, they encamped at Castle Kynock near this town. After a se-

* Leland does not seem quite to agree to this point. 'for,' says he, 'William Warlewast, bishop of Exeter, erected the last foundation of this priory, and had to himself part of the ancient lands of Bodmin Monastery.'

taste for design, and at hours of leisure engraved vignettes on wood, which have been since sought for by the amateurs. At eighteen years of age a desire to improve his condition induced him to undertake a journey to Rome. He left Saluzzo with a school-fellow, Dominic Costa, who expected to receive assistance from an uncle, at that time secretary to a Roman prelate. The two friends proceeded on their journey, but their money failed. Bodoni, by selling some of his engravings on wood to printers, procured sufficient to enable them to get to Rome. But, upon their arrival there, Costa's uncle told them he could do nothing for them, and advised them to return. Bodoni, discouraged by this unexpected reception, yielded to the advice; but, before he quitted Rome, thought he would visit the printing-house of the Propaganda. His general demeanour and vivacity on this occasion attracted the notice of the Abbate Ruggieri, the superintendent of that establishment, and, after an explanation, Bodoni had the good fortune to be engaged there as a workman. In this employment he attracted the notice of the Cardinal Spinelli, at that time the head of the Propaganda, who became his patron, and by whose advice he attended a course of lectures on the Oriental languages in the University of La Sapienza, and learned to read Arabic and Hebrew. Being intrusted with the printing of the 'Arab-Copt Missal,' and the 'Alphabetum Tibetanum,' edited by Père Giorgi, he so acquitted himself, that Ruggieri put his name at the end of the volume, with that of his town: 'Romæ exudebat Johannes Baptista Bodonus Salutiensis, MDCCCLXII.' Ruggieri's suicide, however, in 1766 (or as other accounts say, as early as 1762) rendered Bodoni's longer stay at Rome insupportable from regret. At this time he had also accepted a proposal to come to England, but going to Saluzzo to see his parents, he fell ill; and the Marquis de Felino, in the interval, offering to place him at the head of the press intended to be established at Parma, upon the model of that of the Louvre, Bodoni broke through his engagements, and settled there in 1768.

In 1771 he published specimens of his art in 'Saggio Tipografico di fregi e majuscole,' in 8vo.; followed in 1774 by 'Iscrizioni esotiche,' composed by J. B. de Rossi; and, in 1775, on occasion of the marriage of the Prince of Piedmont with the Princess Clotilde of France, a third work of the same description, entitled 'Epithalamia exoticis linguis reddita,' exhibiting the alphabets of twenty-five languages. Between 1755 and 1788, although his fame became universal, his press was not over-actively employed.

In 1788 the Chevalier d'Azara, the Spanish minister to Rome, made an offer to Bodoni to establish a press in his palace in that city, to print editions of the Greek, Latin, and Italian classics. Bodoni however refused his solicitations; and in 1789 the Duke of Parma, unwilling that so eminent a printer should be drawn away by any one from his dominions, formed a similar project, and furnishing Bodoni with a portion of his palace and a press, some of the most beautiful editions of the classics known issued from it: more especially a Horace in folio, in a single volume, in 1791; Virgil, in two volumes in folio, in 1793; Catullus, Tibullus, and Propertius, in 1794; and Tacitus's Annals, in three volumes, folio, in 1795. Dibdin says, of this last work, only thirty copies were printed, with a few on large paper. In 1794 Bodoni produced a most beautiful edition of the 'Gerusalemme Liberata' of Tasso, in three volumes folio.

His most sumptuous work of all was his Homer, in three volumes in folio, printed in 1808, with a prefatory dedication to the Emperor Napoleon in Italian, French, and Latin. When the French armies entered Italy, in the early part of the revolutionary war, Bodoni and his labours had received a marked protection. On the 21st of January, 1810, Bodoni presented a copy of this splendid work, printed upon vellum, in two volumes, to the emperor, in the gallery at St. Cloud, and in return, received a pension of 3000 francs.

After this time, while Italy was under the French rule, Bodoni received the most tempting offers to quit Parma. Prince Eugene Beauharnois offered him the superintendence of the press at Milan, and Murat that of Naples; but he pleaded age and infirmities, and his wish to remain at Parma. In 1811, having received the Cross of the Two Sicilies from Murat, he proposed to publish for the education of the young prince, the son of Murat, a series of French classics, and commenced the execution of his project by a folio 'Telemachus' in 1812. 'Racine' was to have followed; but it was not published till 1814, after Bodoni's death.

Bodoni had long suffered from the gout, to which a fever was at last superadded. He died November 20th, 1813. Within a few months of his death the Emperor Napoleon nominated him a 'Chevalier de la Réunion,' and sent him a present of 18,000 francs to aid him in the publication of the French classics.

In 1816 Bodoni's widow sent forth a work which Bodoni had prepared as long before as 1809, the date of which year appears on the title-page, entitled 'Le piu insigni Pitture Parmensi indicati agli Amatori delle Belle Arti,' accompanied by engravings of the different pictures.

In 1818 the 'Manuale Tipografico del Cavaliere Giambattista Bodoni,' containing specimens of his various types, appeared from the Bodonian press, the business of which was still carried on by his widow. It forms two splendid volumes in 4to. with his portrait prefixed.

Two works were printed by Bodoni in English; an edition of Lord Orford's 'Castle of Otranto,' printed for Edwards of Pall Mall, in 1791, 8vo.; and an edition of Thomson's 'Seasons,' in two sizes, folio and quarto, 1794.

Bodoni's classics were not all as correct as they were beautiful. Didot discovered about thirty errors in the Virgil, which are noticed in the preface to his own edition. Among the books of King George III. in the British Museum, is one of twenty-five copies of the Homer on the largest paper, a most splendid specimen of typography.

For more minute details of Bodoni's life, the reader may refer to Joseph de Lama's *Vita del Cavaliere Giambattista Bodoni*, 2 tom. Parma, 1816, the second volume of which is filled with an analytical catalogue of the productions of his press. To this book, and to the Supplement of the *Biographie Universelle*, vol. lviii. pp. 421-427, we have been chiefly indebted for the present account. The reader may likewise refer to *Memorie Anedotti per servire un giorno alla vita di G. B. Bodoni*, par le P. Passeroni, 8vo., and to the *Biographie des trois illustres Piemontais, Lagrange, Denina, et Bodoni*, décadés en 1813, par M. de Gregory Verceil, 8vo. 1814. A medallion with a portrait of Bodoni appears in the frontispiece to the first volume of De Lama's life of him.

BOECE, or BOETIUS, HECTOR, the Scottish historian, was of the family of Boece of Balbride, or Panbride, in the shire of Angus (now Forfar), a property which an immediate ancestor of his acquired by marriage with the heiress. He was born about the year 1465-66 in the town of Dundee: whence he had the appellation of Deidonanus, as he is styled in the edition of his history published by Ferrarius. The particulars of his early life are not ascertained; but it appears that he received his grammar education first in his native town and then at Aberdeen, whence he went to Montague College in the University of Paris, where he proceeded A.M., in the year 1494, and in 1497 was appointed professor of philosophy. This academy he in his after-life highly extolled, and continued gratefully to remember. It was here he became acquainted with many of the learned persons of his time; amongst others Erasmus, who kept up an epistolary correspondence with him, and, as a mark of his regard, dedicated to him a catalogue of his works. He calls Boece 'vir singularis ingenii, felicitatis, et facundi oris;' and says of him that 'he knew not to lie.'

In the beginning of the sixteenth century, Boece was invited home by Bishop Elphinstone of Aberdeen, to be principal of the college about to be erected in that city. This invitation, considering the distinguished person from whom it came, and the high office to which it pointed, must have been flattering to Boece; but he was unwilling to forego the literary honours and enjoyments which his present situation held out to him, and he was induced to accept the invitation by means, as himself says, of 'gifts and promises.' When he came to Aberdeen he was made a canon of the cathedral. The magistrates and council of the city, having acquired right to the patronage of the chantry of St. Ninian, then also presented him to the chaplainry of the altar with its emoluments during his life. (Kennedy's *Annals of Aberdeen*, vol. ii. p. 30.) But the main inducement of course was his appointment to the office of principal of the new college.

The learned author of the life of Melville (M'Crie's *Melville*, vol. i. pp. 210, 211) tells us that prior to the fifteenth century no university existed in Scotland, and that the earliest of such seminaries there was the University of St. Andrews. Both propositions are certainly erroneous. Boece expressly says that a university was founded at Aberdeen

Edward, bishop of that see, in the middle of the twelfth century, and his assertion does not stand unsupported. The *History of Fife*, indeed, is incomplete at this point, but the various charters show the existence of Bishop Fife, and the fact of his existence there can be no longer a matter of doubt, of confirmation by Pope Adrian IV., and the translation of the see from Murrhinch to Aberdeen, and the appointment of Edward, bishop of the see. Keith failed in his attempt to do his work, and his last editor has not been able to supply the deficiency; but see Connel *On the History of Fife*, p. 59. We find also that Bishop Alexander de Kilmichael, who ruled the see of Aberdeen from 1357 to 1366, was the first to what seems to have been the common practice of the place, teach the civil and canon laws on the days.

Boece's labours of Bishop Elphinstone were yet wanting. The University of Aberdeen, like many of the foreign universities, and particularly that of Paris, the great prototype of such corporations, from the time of Charlemagne to the middle of the thirteenth century, was without any fixed establishments, or buildings. These were probably in the occasional mansions or private dwellings of the city, as was many years the case with the Universities of St. Andrews and Glasgow. A greater defect was its contracted course of study, which was limited to theology and the laws. The learned and active prelate set himself to remedy both these evils, and at the request of the king, James IV., applied to the pope to institute a university at Aberdeen comprehending every liberal faculty. Accordingly, Pope Alexander IV., by a bull dated at Rome, 10th February, 1494, instituted such a general seminary in the city of Old Aberdeen. This bull was promulgated in 1496, and the next year King James, by charter of confirmation, 22nd May, 1497, empowered Bishop Elphinstone to erect a college within the university. In 1500 further bulls were issued from Rome for securing the privileges of the university, and studying at Old Aberdeen, and in 1505 Bishop Elphinstone issued his [first] foundation of St. Mary's, afterwards King's College, which was confirmed the following year by the pope and then by the king.

It is not likely that during any part of Elphinstone's connection with the University of Aberdeen the academical appointments would be carelessly made; and as that distinguished prelate had now been bishop of the diocese nearly twenty years, we may reasonably suppose that the university chairs were well filled. Yet we find that Boece brought with him and took for his colleague Mr. William Hay, who was a native of the same shire of Angus, and had been educated along with him; considering, as it appears, none of the professors so fit to be his colleague as Hay. We learn from Boece who were the other professors in the college, but it is unnecessary to notice them here; and there are no materials for judging with accuracy how Boece continued to perform the duties of his place. In the end of the year 1514 his friend and patron, Bishop Elphinstone, died.

In the beginning of 1522 Boece published at Paris his *Vita Episcoporum Murrhincensium et Aberdonensium*, a work to which he was, it seems, led by the exemplary life of the late bishop, an account of whom, indeed, occupies the greater part of it. The dedication, which is to Bishop Dunbar, is dated from the College of Aberdeen, prid. Cal. Sept. 1521. The same year his printer, Badius Ascensius, gave to the world Major's *History of Scotland*, composed by Muir (principal regent of Glasgow College, and afterwards principal of St. Salvator's College, St. Andrews) when he was attending Montague College in the University of Paris some years previous. Several other histories of Scotland existed at this time, particularly Prior Wynton's metrical *Cronykil*, and Fordun's *Scotichronicon*; long the great fountain of Scottish history. Bishop Elphinstone applied himself to the same department of learning, and composed (chiefly out of Fordun) a history of his country; but it is probable that Muir's book at once settled the fate of Elphinstone's work (which is yet in manuscript), and deterred Bishop Dunbar to rouse the higher abilities and known great acquirements of Boece to the task.

In 1525 the first edition of Boece's *History of Scotland* was published. If we apply to this work, as some appear to have done, the standards which would be applied to histories of our own days, its literary character alone could save it from contempt; but we must apply to it the standard of the day in which it was issued: when knowledge was in the hands of few, and in those few hands meagre and inac-

curate; when communication was difficult, and intercourse rare; and when physical science was in its infancy—we should then no doubt admit that Boece merited what he received. In 1527 the king gave him a pension of 50*l.* Scots yearly, to be paid by the sheriff of Aberdeen out of the royal casualties. Two years afterwards this pension was directed to be paid by the customars* of Aberdeen until the king should promote Boece to a benefice of 100 marks Scots of yearly value. By a subsequent regulation the pension was paid partly by the king's comptroller and partly by the treasurer. (*Treasurer's Accounts*, ap. Pitcairn's *Criminal Trials*.) The payment appears for the last time in the treasurer's books for 1534. It is probable that about that time the king was enabled to advance Boece to a benefice, and that the learned prelate then obtained the rectory of Fyvie in the shire of Aberdeen, which he held at his death in 1536. The same year (1536) Bellenden's translation of Boece's *History* was published at Edinburgh. This translation was made at the command of King James V., whose limited education precluded him from perusing the Latin original. While it proceeded, Bellenden, as we see from the treasurer's accounts, had a yearly allowance from the king of 30*l.* Scots. In the same accounts, June, 1533 (Pitcairn's *Crim. Trials*), we find a sum of 100*l.* Scots entered to Bellenden "for a new Cronikle given to the Kingis grace;" but whether this "new Cronikle" was the chronological compendium of Scottish history written that year by a brother of the minor Observants at Jedburgh (Nicholson's *Scottish Historical Library*, p. 38), or Bellenden's own performance, does not appear. Bellenden's translation of Boece was a free translation, the author having added and altered as he thought proper; and it again was put from the Scottish dialect, in which it was written, into English, with equal freedom, by Harrison. (Ap. Hume's *Chron.* vol. i.)

In 1527, Boece's brother Arthur, who was a doctor of the canon law, and a licentiate in the civil, and the author of a book of Excerpts from the canon law, appears to have been appointed canonist of King's College. (Kennedy's *Annals of Aberdeen*.) The next year Boece himself took the degree of doctor in divinity in the college; and on this occasion the magistrates and town-council of Aberdeen voted him a present of a tun of wine, when the new wines arrived, or 20*l.*, to buy a new bonnet. (*Council Register*, ap. Kennedy's *Annals*, vol. ii. p. 367.) The year following a *Nova Erectio* of King's College was issued for the better provision of its members, into which unquestionably the wisdom and experience of Boece entered, but to what extent is uncertain.

He died about the year 1536, and was buried in the chapel of the college near to the tomb of Bishop Elphinstone. In the front of the chapel is his coat of arms: a saltire and chief, H. B. ob. 1536. (Kennedy's *Annals*.)

BEOTIA was the antient name of that part of the district of Livadia which was bounded on the west by Phocis, on the north and east by the Opuntian Locrians and the Euboeic sea, and on the south by Attica and the Halcyon sea. This country may be described as consisting of two basins of very irregular form and of unequal dimensions, the valley of the Asopus, and the lower part of the vale of the Cephissus. The valley of the Asopus is bounded on the south by the range of Parnes and Cithæron; the small basin of the Lake Hylis may perhaps be considered as belonging to this division, which contained the towns Thebes, Tanagra, Thestus, Plataea, and Asca. The northern division was not completely surrounded by natural boundaries, inasmuch as the upper vale of the Cephissus belonged to the Phocians. It included the lake Copais, and the towns Orchomenus, Chæronea, Coronea, Lebæda, and Haliartus. The following resemblance or comparison has been suggested between the two natural divisions of the country: each of them had its lake and its river; and as those who dwelt by the Cephissus were called Epicrætes, so those who inhabited the marshy land near the Asopus were called Paraspoti; perhaps also Parapotamii, as we would infer from a passage in Euripides (*Bacchæ*, sc. Herm.). There was also a Phocian town called Parapotamii on the Cephissus. In antient times the two valleys were under the separate dominion of the two tribes, which in each of them were most distinguished by their wealth and population. In the northern Orchomenus there

* Customars—customers—were the officers who levied the king's duties and rents in his burghs, and paid them over to the great chamberlain. It was formerly a common practice to direct pensions to be paid in the way stated in the text.

long time took the lead, and the city on the Ismenus, under the different names of Cadmea and Thebes, was always the ruling power in the southern portion. On the coast of the Euboeic sea were the towns of Anthedon and Aulis; and a few miles N.W. of the latter, at the foot of the mountain of the same name, was the unfortunate Mycalessus.

According to the recent survey of Captain Copeland, a mountain wall lines the whole continental coast of the Euripus, from the valley of the Asopus to the flats at the outlet of the Sperchius. From Cape Grados, which is immediately opposite to the islet called Strongile or round, the mountains run westward and form the boundary between the basin of the Cephissus and the Sperchius, known in former times as the range of Oeta. This high mountain-barrier from the outlet of the Asopus, nearly as far north as the bold rocky coast of Cape Stalamata, which is a little north of the ruins of Larymna, belongs to the antient Bœotia. The heights marked along this coast, beginning with that nearest to the mouth of the Asopus, are as follows: names are not given to all of them in the survey—1780 feet, 1909, Mount Ktyra 3401 feet; one of these three is probably the Salgameus of Strabo. North of these elevations, still following the coast, the following are marked—1303, 2655, 2272, C. Skropo-neri 1319, 1630, hills near the ruins on the site of Larymna, 1836 feet. The whole length of the coast of Bœotia, following the indentations, is perhaps about thirty miles. The coast of Eubœa opposite to Stalamata and Larymna rises still higher, and the narrow sea between the two coasts is in some places more than sixty fathoms deep. There is also deep water along the Bœotian and Eubœan coasts, southward to where the Euripus narrows at Aulis. From the point where the contracted channel of the Euripus begins to widen again, a low tract which contains the outlet of the Asopus continues for some miles along the coast to where the high lands of the range of Parnes abut on the sea.

After describing the coast, Strabo observes (p. 405. Casaub.) 'that the interior consists of hollow plains, surrounded on all sides by mountains: on the south by those of Attica, on the north by those of Phocis; on the west Cithæron enters the province in an oblique direction, having its origin a little above the Crissæan gulf, where it joins the mountains of Attica and Megaris, and then turning into the plain country subsides in the territory of Thebes.' The basin of the lake Copais must no doubt be at a considerable elevation. Thiersch asserts that the level of the lake Copais is more than 1000 feet above the sea, but this is an exaggeration, and the statement appears to be only a guess. This lake is the receptacle of an extensive drainage. The Cephissus, which rises in the high central mountains of this part of the continent, runs in a long valley by a general south-east course into the lake Copais, which receives also the waters of the small streams of the Melas and Laphysius. The lake is separated from the sea by the range of Mount Ptoon, about four or five miles across. Between the eastern end of the lake and the sea there are subterranean channels, but the wells or shafts which communicate with them are now choked up. (See Thiersch, *Etat actuel de la Grèce*, ii. p. 23.) The great work for draining the lake is one of the oldest existing memorials of the civilization of the country. These conduits having become choked up from neglect, Crates of Chalcis, in the time of Alexander, began to restore them, and he succeeded so far, in spite of the civil troubles, that the sites of the antient Orchomenus and Eleusis were discovered. When Strabo says that the Cephissus discharges itself into the sea near Larymna, he does not probably mean to say that this is a natural outlet. He says in another passage (p. 406) 'that a chasm having opened close upon the lake near Copæ, made an underground passage for the stream thirty stadia long, which received the river. The Cephissus emerged at Larymna of Locris, where there is a lake of the same name, and entered the sea.' A small stream is marked in Captain Copeland's map near Larymna, which may probably be the stream mentioned by Strabo. The basin of the Copais contains a large amount of fertile land, capable of growing cotton and other products in abundance.

According to Dicaearchus, the length of Bœotia was 500, its breadth 270 stadia. Its surface is 1080 square miles, and its population, according to Mr. Clinton's deductions, was, in the time of Thucydides and Xenophon, 130,500 (*Fast. Hell.* ii. 399); but we do not consider either of these estimates as resting on any solid reason. If we

admit the area to approximate to the truth, which we doubt, the population given is unreasonably low for a country which is very fertile, and was probably well cultivated. Kent, an agricultural county, which contains a very large proportion of poor land, has a population of 480,000 on a surface of 1557 square miles. Xenophon says that the Athenians and Bœotians were on a par in point of population, but probably there were not so many slaves in Bœotia as in Attica. Bœotia was remarkable in ancient times for its extraordinary fertility, and we agree with Mr. Thirlwall in thinking 'that it was this cause more than the dampness and thickness of their atmosphere that depressed the intellectual and moral energies of the Bœotians, and justified the ridicule which their temperate and witty neighbours so freely poured on their proverbial failing.' (*Hist. of Greece*, p. 12.) We might add that among the Greeks piggishness was another name for sensuality, not for stupidity and dullness. Some of the principal productions and manufactures of the country are enumerated in the *Achænians* of Aristophanes, v. 781, seq. The linen fabrics of Bœotia were held in great estimation, and the iron mines which were antiently worked in the eastern chain of mountains supplied the material for the famed Bœotian cutlery; hence we read in antient writers of Aonian iron, Aonian weapons, and helmets of Bœotian workmanship, when excellence is meant to be described.

There is perhaps no country of Hellas, with respect to the antient inhabitants of which so many and such complicated traditions exist. We may divide the earliest of these traditions into two classes, one including those which refer to the Egyptians as the earliest inhabitants of Bœotia, the other containing those traditions to which we owe the old story of a Phœnician colony. It is very difficult to distinguish between truth and fiction in these narratives. With respect to the former class we are inclined to reject them altogether. The arguments urged in support of them are principally derived from the similarities existing between Egypt and Bœotia; the Melas used to overflow its banks like the Nile; the lake Copais was covered with swimming islands like those near Buto; the *Nymphæa alba* and melons grew both in Egypt and in Bœotia, which were equally celebrated for their linen manufactures, and the same veneration was paid to the eel in both countries. Besides, the name of the traditionary king of Orchomenus, Minyas, is nearly the same with that of the first Egyptian monarch, Menes or Min. But these arguments are quite fallacious, for the similarity of products may be sufficiently accounted for from other causes, and the fundamental worship of the Orchomenians, namely, that of the Charites or Graces, had nothing corresponding to it in Egypt (Herod. ii. 50). As to the similarity between the legend of Trophonius and Agamedes, and the story told in Herodotus (ii. 121) of the treasury of Rhampsinetus, C. O. Müller has shown (Orchom. p. 100) that the former existed among the Triphylian Minyans before the time of Psammetichus, when the connexion between Egypt and Greece became more intimate, and therefore that it could not have been derived from Egypt after that time. This does not indeed altogether remove the difficulty, for the story may have existed in Egypt at the time when the supposed colony sailed for Bœotia, and may have been carried thither; but when we consider how commonly the Egyptian priests appropriated the Greek legends, and how easily, when there was one point of resemblance between two legends existing in the different countries, they invented an identity, we shall scarcely hesitate to add this to the numerous forgeries with which they imposed upon the credulity of the Greek travellers.

The traditions of the second class, which are much older, and consequently more involved than the former, relate that Thebes was founded by a Phœnician prince named Cadmus, when in search of his sister Europa, who had been carried off by Jupiter. But this legend admits of the following plausible solution, which is due to C. O. Müller (*Orchom.* p. 118):—It was the custom of the Greeks to refer to Cadmus, when they had once transformed him from a Pelagic god into a Phœnician prince, all the actions of the Phœnicians in Greece and in the Ægean Sea. For example, the Phœnicians were the first workers of the gold mines in Thasos: hence Thasos is set down as a brother of Cadmus, and the relation of the Phœnicians to the Thasians is referred to the search after Europa. Similarly, as the Phœnicians taught the Greeks the characters of the alphabet,

the supposed Phœnician, Cadmus, was made the personification of this action. Now it is not probable that Thebes, an inland town, which had no internal commerce, and where trading was in fact stigmatised, should have been founded by the Phœnicians, who generally built no cities but as emporia for traffic. We are therefore thrown back upon the supposition that the whole story is a fiction, arising out of a misunderstanding of the completely Greek name Phœnix, and that Cadmus was, as there are many reasons for supposing, an indigenous Theban name. The old inhabitants of Thebes were called Cadmeans, their city Cadmeia, and they carried this ethnic name with them into their colonies. Cadmus was probably a deity of the Tyrrhenian Pelasgi, a tribe whom Müller considers to have been originally one and the same with the Cadmeans (*Orchom.* p. 121); and this appears to be confirmed by the etymology of the word κάδμος (καδ, found in κάδ-ω, κη-καδ-μίνομος), and by what Herodotus says (ii. 52) about the Pelasgic derivation of the word θεός. Besides, the effect produced by Cadmus sowing the dragon's teeth, in the supposed Phœnician legend, is the same as that experienced by Jason. Now Jason is an Iolcian Minyan, that is, a Pelasgian; therefore, if, as is generally supposed, a sameness of mythi argues a relationship of the people in which they exist, Cadmus and the Cadmeans were Pelasgian also. The Cadmean dynasty, celebrated in ancient poetry, and especially in the Greek drama, is purely mythical; the whole genealogy is nothing but the development of the idea of an offended primitive power, and a statement in the form of a narrative of the purifications necessary to conciliate it. (See Müller's *Second Essay on the Eumenides*, sec. 81.)

The Cadmeans and the cognate tribe of the Minyans occupied Bœotia till about sixty years after the taking of Troy, when they were driven out by the Æolian Bœotians, a Thessalian people, settled in the upper vale of the Apidanus, and in the neighbourhood of the Pagasetic bay, who had themselves been forced to leave their settlements by the Thessalian immigration from Thesprotia. According to one tradition the Bœotians not only expelled the Cadmeans, but also a Thracian tribe, who had taken up their abode in Asra and other towns at the foot of Mount Helicon. These Thracians were a half-Greek people, and were connected with the Pierian Thracians, as is proved by their common worship of the muses, and their Orphic-Dionysian rites. Their Dionysius however was not the same with the Cadmean, who was represented as a co-deity of the Theban Demeter. [See ΒΑΚΧΙΟΣ and ΔΕΜΗΤΗΡ.] Thucydides says (i. 12)—'The Bœotians who now inhabit the country were expelled from Arne by the Thessalians sixty years after the taking of Troy, and colonized the land now called Bœotia, but formerly known by the name Cadmeis.' He adds, parenthetically—'There was however a portion of them (ἀποδασμῶς) in this country, even before that time, and to this belong the Bœotians who took part in the expedition against Troy.' Now it seems probable that Homer, or whoever drew up the catalogue of the ships, introduced the Bœotians into it merely to please the then inhabitants of that country, to whom his wanderings probably extended, and the remark of Thucydides is perhaps only a proviso to reconcile the historical fact with the authority of the poet, which was in his time considered incontrovertible. (See Müller's *Orchom.* p. 394.) The Bœotians having thus expelled the Minyans from Orchomenus, and the Cadmeans from Thebes, the former fled to Laconia, whence they were driven by the Dorian invasion twenty years afterwards, and took refuge some of them in Triphylia, others in Thera, and these at a later period went with the colony to Cyrene. (See Thirgo's *Res Cyrenensium*.) The Gephyræans and the Ægids, who were priest-families of the Cadmeans, proceeded to Athens and Sparta; but the old Pelasgic people, the Cadmean commonalty, first went to Athens and thence to Lemnos, Samothrace, and the coasts of Æolia. Twenty years after the Æolian conquest of Bœotia, the Dorian invasion of the Peloponnesus took place, and the expelled Pelopids and Achæans, on their way to Asia through Bœotia, were joined by so many of the Æolian Bœotians, that the settlement is generally known by the name of the Æolian or Bœotian colony. (Strabo, 402, c.)

We have only fragmentary information with respect to the early history of the people, which from this time continued to be the inhabitants of Bœotia, nor are we able to speak with much certainty of the constitutions of the different towns, and of their relation to one another. We know

from Æschines that the Bœotians were members of the Amphictyonic assembly, and we are informed by various authors that the Bœotian towns soon became members of a league of which the Theban state was the head. The deputies of the confederate states met in the plain before Coroneia, at the temple of Athena of Iton; and this meeting took place at the festival of the Pambœotia. Every one of the confederate states was, as such, free, but several of them had smaller towns dependent upon them. (See Thucydides, iv. 76, and Dr. Arnold's note.) It is very difficult to determine the number of the independent states; but as we are told that at the ancient festival of the Dædala, which was celebrated every sixty years at Platææ, fourteen wooden images were carried in procession to the summit of Cithæron, and as we know that seven was a holy number among the Bœotians, we may infer that fourteen was originally the number of the members of the confederacy, just as we find in other states that holy numbers are made the basis of political divisions. (Müller's *Orchom.* p. 222; Niebuhr's *Rome*, vol. ii. p. 84, English translation.) Müller conjectures (p. 403, note) that these fourteen states were, Thebes, Orchomenus, Lebadeia, Coroneia, Copæ, Haliartus, Thespiæ, Tanagra, Ocaleæ, Onchestus, Anthedon, Chalia, Platææ, and Eleuthæræ. We are pretty certain that the first eight and Anthedon were members of the confederacy; for Ocaleæ we would substitute Oropus. Now it appears that at the time of the battle of Delium (B.C. 424) there were (according to our interpretation of Thucydides, iv. 91, an interpretation which Müller once adopted, *Orchom.* p. 409, note, but now rejects, Gött. Gel. Anz. 1830, p. 1072) twelve Bœotarchs. These Bœotarchs were the representatives of the different towns of the confederacy, Thebes having two votes among them. There were therefore at that time eleven confederate towns, which is easily accounted for by the fact that Platææ was not in existence, and that Eleuthæræ and Oropus were under the dominion of Athens; and a similar diminution of the confederacy was perhaps the reason why at the battle of Leuctra there were only seven Bœotarchs. The affairs of the confederacy were debated at four national councils, the Bœotarchs having the initiative authority, the members of the council the power of confirmation. (Thucydides, v. 36.) The Bœotian confederacy was dissolved in B.C. 171, after having undergone many changes and fluctuations. (See Clinton's *Fest. Hell.* ii. 398, h.)

With regard to the form of government which prevailed in the several Bœotian towns, we have good reason for believing that it was the same with that of Thebes, which was in the historical times generally a rigid oligarchy. In or shortly after the 13th Olympiad, Philolaus, a Corinthian noble, retired to Thebes, where he undertook the business of legislating, apparently with the view to correct some of those instabilities which were constantly taking place, and threatening to destroy the equilibrium of the ancient aristocracies. This object he seems to have effected by the introduction of νόμοι θετικοί, or adoptive laws, by which probably the adoption of younger sons from other families was insisted upon in cases where a member of the ruling caste had no offspring of his own, and so a diminution of the numbers of the privileged order was obviated. (Aristot. *Polit.* ii. 12.) The executive power was vested in an archon, chosen yearly by ballot. With such a government the Bœotians must naturally have been opposed to the neighbouring democratical state of Attica; and accordingly we find them about the year 507 B.C. joining the Peloponnesians and Chalcidians in an attack upon the Athenians (Herod. v. 74, &c.), and probably the same cause made them go over to the Persians in 480 B.C. The victory at Platææ deprived them of their authority in the Bœotian league, until the Lacedæmonians, from interested considerations, acceded to the wishes of the oligarchical party in the lesser states, and restored to them in 457 B.C., the power which they had taken from them. In the year 455 B.C., the decisive battle of Cnophyta subjected all Bœotia to the Athenians, and Thebes became democratical; but a few years after (447 B.C.) in consequence of some abuse of power on the part of the democracy, the oligarchical form of government was restored (see Aristot. *Pol.* v. 2. comp. v. 6.), and the signal defeat sustained by the Athenians at Coroneia freed Bœotia from her foreign yoke. The Thebans were active partizans of Sparta in the Peloponnesian war, and contributed mainly to the downfall of Athens; but in the year 395 B.C., they became members of the confederacy against Lacedæmon, which was broken up in the course of the

following year by the victory which Agesilaus gained over them at Coroneia. The peace of Antalcidas followed (387 B.C.), and five years after the treacherous seizure of the Cadmea or citadel of Thebes, by Phœbidas the Lacedæmonian and its subsequent recovery by Pelopidas, brought about another war between Bœotia and Lacedæmon, in which the great abilities of the Theban generals, Epaminondas and Pelopidas, made Bœotia the leading power in Greece. But the former fell at Mantinea, and the power of Thebes fell with him. The Mæcedonian influence now began to prevail; Athens and Thebes were overthrown by Philip at Chæroneia (338 B.C.), and three years after the latter city was entirely destroyed by Alexander the Great, and its territory divided among the Periœci. In the year 315 B.C., Cassander rebuilt Thebes, with the zealous co-operation of the Athenians, but it never regained its political importance. Thebes favoured the Roman cause in the war with Perseus, but it dwindled away to a mere nothing under the Roman dominion. (Pausan. viii. 33. 1.)

Notwithstanding the proverbial dullness of the Bœotians, some of the great writers of Greece were natives of this district. Hesiod was born at Ascra, Corinna at Tanagra, Pindar at Cynoscephalæ, and Plutarch at Chæroneia.

We refer those who wish to investigate fully the difficult subject of the early history and government of the Bœotian towns to C. O. Müller's work, *Orchomenos und die Minyer*, Breslau, 1820, which we have often quoted; to G. A. Klütz, *De Fœdere Bœotico*, Berol, 1821; and to Wachsmuth's *Hellen. Alterthumsk. I. i. p. 128.*

BOERHAAVE, HERMANN, was born on the 31st of December, 1668, at Voorhout, a village two miles from Leyden, of which his father, James Boerhaave, was the minister. Being designed for the church, he was instructed by his father in the classical languages, and at the age of eleven he was already able to translate both Greek and Latin with tolerable accuracy. About this time an accident occurred which perhaps first turned his thoughts to that profession of which he became so brilliant an ornament. In the twelfth year of his age a malignant ulcer broke out upon his left thigh, which not only set all the resources of medicine at defiance, but exposed him to such painful applications, that it was hard to say whether the remedies were not more tormenting than the disease. Tired of these useless experiments, he took the management of his case into his own hands, and finally effected a cure by dressing the ulcer with salt and urine. Partly for the sake of his education, and partly that he might have the benefit of surgical advice, he was taken by his father in 1682 to Leyden, where he was placed in the fourth class of the public school. His genius and industry soon raised him to the sixth, from which it was usual, after six months, to be transferred to the university. But on the 12th of November, 1682, his father died, leaving a very slender provision for his widow and nine children. Triglandius (one of his father's friends, who was soon after made professor of divinity at Leyden) recommended young Boerhaave to Van Alpen, in whom he found a generous and constant patron.

Greek, Latin, Hebrew, Chaldee, with antient, modern, and ecclesiastical history, and the mathematics, were among his more especial studies, and he soon began to give public proofs of his eloquence and erudition. In 1688 he delivered an oration before Gronovius, the professor of Greek. ('Oratio academica, quâ probatur, benè intellectam à Cicerone, et confutatam esse, sententiam Epicuri de summo bono,' Lugduni Bat. 1690.) In 1689 he took the degree of doctor of philosophy, the subject of his inaugural thesis being the distinction between the soul and the body. ('Dissertatio inauguralis de distinctione mentis à corpore,' Lugduni Bat. 1690.) In this, as in his former discourse, he refuted the atheistical doctrines of Epicurus and Spinoza, and obtained a great reputation for piety and learning.

About this time, having exhausted his scanty resources, he taught the mathematics as a means of enabling him to continue his studies. Without giving up his intention of entering the ministry, he now began the study of physic by a diligent perusal of Vesalius, Bartholinus, and Fallopius; he was a constant attendant at Nuck's anatomical demonstrations, and examined the anatomy of different animals himself. After he had gone through a course of medical reading, finding, as he tells us, that Hippocrates was the fountain of all medical knowledge, and that all later writers were little more than transcribers from him, he returned to him, and spent much time in making extracts from his

writings, digesting them in order, and fixing them in his memory. Among the moderns none engaged him longer, or with more profit, than Sydenham, to whose merits he has left the attestation, 'that he perused him frequently and each time with greater eagerness.' He prosecuted chemistry and botany with equal ardour, and, in conjunction with all these inquiries, still pursued his theological studies. He took the degree of doctor of physic at Hardewick in 1693, having held a public disputation 'De utilitate explorandorum excrementorum in œgris, ut signorum.' (Hardewick, 1693; Lugduni Bat. 1742.) He now returned to Leyden with the design of undertaking the ministry, but was diverted from his purpose by a singular accident. A short time before, Boerhaave happened to be in a public boat, when a conversation arose among the passengers concerning the doctrines of Spinoza, which, as they all agreed, tended to the utter overthrow of religion. At last one of them began to inveigh against Spinoza in so violent a strain, that Boerhaave, wearied with his angry invectives, asked if he had ever read the author against whom he was declaiming. The speaker was checked in the midst of his invectives; this was observed by a stranger, who inquired the name of the young man whose question had put an end to the discourse, and set it down in his pocket-book. In a few days it was the common talk at Leyden that Boerhaave had gone over to Spinoza. Had Boerhaave been at this time firmly rooted in his design of entering the church, it is difficult to conceive that this absurd calumny could have made him change his resolution. It seems more probable that, feeling himself eminently skilled both in theology and physic, he was wavering in his choice of a profession; and as the slightest weight will turn a loaded but well-balanced beam, so even the breath of a slanderer made Boerhaave a physician.

He now commenced the practice of physic, and his time was taken up with visiting the sick, studying, making chemical experiments, investigating every part of medicine with the utmost diligence, teaching the mathematics, and reading the Scriptures. In 1701 he was recommended by Van Berg to the university as a proper person to succeed Drelincourt in the lectureship of the theory of medicine. He was elected on the 18th of May, and his inaugural discourse was on the study of Hippocrates. ('Oratio de commendando studio Hippocratico,' Lugduni Bat. 1701.) His lectures were received with great applause, and he was soon prevailed upon by his audience to enlarge his original design, and instruct them in chemistry. This he undertook, not only to the advantage of his pupils, but to that of the science itself.

It was then, in 1703, that he delivered his lecture 'De usu ratiocinii mechanici in medicinâ,' and also began, in theory at least, to leave the Hippocratic method of simple observation, and to intrude mechanical speculations into the domain of the art of healing. Thus he supposed that the adaptation of the calibre of the vessels to the size of the globules of the animal fluids was the principle which regulated the circulation of the humours, their separation from the blood in the different organs of secretion, as well as the morbid congestion of the blood in defluxions, tumours, and inflammations; so that, in the treatment of disease, all the efforts of the physician were to be directed to the re-establishment of this mechanical equilibrium, and the medicines given with this intention were called deobstruents, incisives, &c. To these mechanical hypotheses he joined chemical ones; thus he supposed many morbid phenomena to arise from acrimony of the blood, which it was the business of the physician to neutralise. This part of his doctrine, the humoral pathology, as it is called, though banished for a time from the schools, has always kept its hold on popular belief, and bids fair to revive again. Late investigations into animal chemistry have shown that certain deviations from the healthy composition of the blood accompany, if they do not produce, certain diseases. Thus in jaundice the blood contains both the colouring matter and the resin of the bile; in gout the blood is loaded with earthy phosphates; and in cholera it is deficient both in water and in alkaline salts. But the most remarkable of all these statements respects chlorosis: in this disease, where the sickly pallor of the patient would naturally be attributed by the ordinary observer to deficiency or poorness of the blood, we find a singular deficiency of colouring matter: a thousand parts of blood, which ought to contain 133 parts of colouring matter, in one case contained only 62; in another but 48.7. (Jenning on

the *Chemistry of the Blood*, in the Trans. of the Prov. Med. and Surg. Association, vol. iii.)

The reputation of Boerhaave now began to bear some proportion to his merit, and accordingly in 1703 the professorship of physic being vacant at Groningen, he was invited thither, but he preferred remaining at Leyden.

He had now read lectures on physic for eight years without the title or dignity of a professor, when in 1709 he obtained the chair of medicine and botany vacant by the death of Hotton. His inaugural discourse was on simplicity in the practice of physic, 'Oratio quæ repurgatæ medicinæ facilis asseritur simplicitas,' Lugdun. Bat. 1709. At this time also he published the 'Institutiones medicæ in usus annuæ exercitationis domesticas,' Lugdun. Bat. 1708, 1713, 1720, 1727, 1734, 1746; and Lutetis, 1722, 1737, 1747; and the 'Aphorismi de cognoscendis et curandis morbis, in usum doctrinæ medicinæ,' Lugdun. Bat. 1709, 1715, 1728, 1734, 1742; Lutetis, 1720, 1726, 1728, 1745, 1747.

On these two great works the reputation of Boerhaave is founded: they have been translated into several European languages and even into Arabic; and Van Swieten, himself a physician of no ordinary talent, illustrated the aphorisms with a commentary extending to five quarto volumes. Haller published a commentary on the 'Institutiones' in seven quarto volumes, Leyden, 1750; and Lamettrie published a French translation with notes, 'Institutiones et Aphorismes,' Paris, 1743, 8 vols. 12mo.

In the 'Institutiones' Boerhaave indicates the plan of study to be followed by a physician; he gives a compendious history of the art, and an account of the preliminary knowledge which is necessary for its practice; then, entering upon his subject, in five successive chapters he describes the parts and functions of the body, their alterations, the signs of health and disease, together with hygiene and the art of prolonging life. Lastly, he treats of the aids which art affords to medicine; here he details the system on the principles of which we slightly touched above. It was the broadest and most comprehensive view that had yet been taken; a model of erudition and method, embellished rather than encumbered by his opinions on the acrimony of the fluids, and his mechanical and hydraulic theories. In his 'Aphorismi' Boerhaave gives a classification of diseases, and sets forth their causes, their nature, and their treatment, with a short but accurate summary of the whole of ancient and modern medicine. This, like the former work, is a masterpiece of learning, order, and correctness of style.

Boerhaave shed almost equal lustre upon the chair of botany, which he held with that of medicine, by the publication of his 'Index Plantarum quæ in horto academico Lugduno-Batavo reperiuntur,' Lugduni, Bat. 1710, 1718, 8vo. An enlarged edition of this work, with plates, appeared under the title of 'Index alter plantarum quæ in horto academico Lugduno-Batavo aluntur,' Lugduni, Bat. 1720, 4to., 1727, 2 vols. 4to. Boerhaave greatly increased the number of specimens in the botanical garden; he figured new plants, established new genera, and was one of the first who introduced the stamina and the sexual differences among their characteristic distinctions.

In 1715 Boerhaave was made rector of the university of Leyden, and in the same year was appointed physician to St. Augustine's Hospital, and professor of practical medicine, having already delivered the lectures more than ten years. Twice a week he gave clinical lectures at the hospital, and, like other great physicians, forgetting his theories for awhile, distinguished and treated the complex forms of disease before him with that unrivalled tact which stamped him the first practitioner of his age. On laying down his office of rector, Boerhaave delivered one of his finest orations, 'Oratio de comparando certo in physicis,' Lugduni Bat. 1715, 4to.

He already held the chairs of theoretical medicine, practical medicine, and botany, and on the death of Lemort in 1718, that of chemistry was added to the number, a subject on which he had lectured since 1703. In conformity with his custom, he opened his course by a general discourse worthy of his other performances of that kind, 'Oratio de chemiæ suorum erroribus expurgantibus,' Lugduni Bat. 1718, 4to.

Boerhaave was one of the first who made chemistry delightful and intelligible; and though the rapid progress of the science has made his works on this subject obsolete, he will ever be mentioned with veneration in its history. He excelled in experiments, and repeated them with unwearied patience; he performed one experiment 300, and

another 877 times. He was skilled in organic chemistry, and showed how the animal fluids might be decomposed by simple means, and how to avoid destructive distillation over the open fire, in the manner then practised. The fame acquired by his elements of chemistry may in some measure be judged by the following list of its editions:—'Elementa Chemiæ quæ anniversario labore docuit in publicis privatisque scholis,' Lutet. 1724, 2 vols. 8vo.; Lugduni Bat. 1732, 4to.; Lutet. 1733, 1753, 2 vols. 4to., with the author's minor works: another edition printed at the Hague in 1746, in 8vo, translated into French by Allamand and enlarged by Tarin, Paris, 1754, 6 vols. 12mo.; of this Lamettrie published a compendium under the title of 'Abrégé de la Théorie Chimique tirée des écrits de Boerhaave, avec le Traité du Vertige,' Paris, 1741, 12mo. There are also English editions published in 1735 and 1741, and an abridgment with critical notes in 1732.

The reader who is desirous of weighing Boerhaave's merits as a chemist must not consult the editions printed before 1732, as they were published merely from his pupils' notes. Boerhaave, of course, was not pleased with the indiscreet zeal of his pupils, who often published works which in his opinion were not yet ripe for the press: he complains of it in the Leyden Gazette for 1726.

So many offices discharged with unparalleled success obtained for Boerhaave a reputation which was almost without a precedent, and which scarcely knew any other limits than those of the civilized world. The learned of every part of Europe corresponded with him, and every academy desired to be honoured by dissertations from the hand of the most distinguished master of his art. There is a story that a Chinese mandarin wrote him a letter, which easily reached him, addressed merely *To Boerhaave in Europe*. The anecdote may be apocryphal, but it shows the universality of his fame. Much of his time was of course taken up with patients, some of whom came to consult him from the most distant countries of Europe; and in answering letters, which in urgent cases were sent to ask the advice of the first physician in the world. The pecuniary proceeds of his practice must have been enormous, for at his death he left more than two millions of florins. He was elected a correspondent of the Academy of Sciences at Paris in 1715, and a foreign associate in 1728; in 1730 he was elected a fellow of the Royal Society of London. He communicated to the Royal Society and to the French Academy some observations on mercury, which were published in the Philosophical Transactions and in the Memoirs of the Academy of Sciences for 1734.

In 1722 his course both of lectures and practice was interrupted by the gout, which he brought upon himself, he says, by an imprudent confidence in the strength of his constitution, and by transgressing those rules which he had a thousand times inculcated upon his friends and pupils. Rising before day-break, he had gone hot and perspiring from his bed into the open air, and exposed himself to the chill breezes of the morning. In consequence of his illness he lay five months in bed without daring to move, because any effort renewed his torments, which were so exquisite, that he was at length not only deprived of motion but of sense. In the sixth month of his illness, having obtained some remission, he took simple medicines in large quantities, and got well. His unexpected recovery was celebrated on the 11th January, 1723, by a public illumination. Fresh attacks of illness in 1727 and 1729 shattered his constitution and forced him to resign the professorships of chemistry and botany: on this occasion he delivered the lecture entitled 'Oratio quam habuit cum botanicam et chemicam professionem publicè poneret,' Lugduni Bat. 1729, 4to.

In 1730 he was again elected rector of the university, and on quitting this honourable office he delivered a discourse on the subserviency of the physician to nature, 'De honore medici servitutis,' Lugduni Bat. 1731, 4to. About the middle of 1737 that illness began which proved fatal. In a letter to a friend in London, dated September 8th, 1738, he details the symptoms with a masterly hand; and it appears clearly from his description that he was labouring under organic disease of the heart, with its ordinary concomitants—general dropsy, disturbed sleep, and a distressing sense of suffocation. He expired on the 23rd of September, 1738, in his seventieth year.

Boerhaave was the most remarkable physician of his age, perhaps the greatest of modern times: a man who, when we contemplate his genius, his erudition, the

singular variety of his talents, his unfeigned piety, his spotless character, and the impress which he left not only on contemporaneous practice, but on that of succeeding generations, stands forth as one of the brightest names on the page of history, and may be quoted as an example not only to physicians, but to mankind at large. 'He was of a robust and athletic constitution of body,' says Hutchinson, 'so hardened by early severities and wholesome fatigue, that he was insensible of any sharpness of air or inclemency of weather. He was tall, and remarkable for extraordinary strength. There was in his air and motion something rough and artless, but so majestic and great at the same time, that no man ever looked upon him without veneration, and a kind of tacit submission to the superiority of his genius. He was always cheerful and desirous of promoting mirth by a facetious and humorous conversation. He was never soured by calumny and detraction, nor ever thought it necessary to confute them; 'for they are sparks,' said he, 'which, if you do not blow them, will go out of themselves.' The town of Leyden, which, on his recovery from his first illness, had given him so signal a proof of its affection, erected a monument to his memory in St. Peter's church.

He married, September 10th, 1710, Mary Drolenveaux, the only daughter of a burgomaster of Leyden, by whom he had four children, of whom one alone, Joanna Maria, survived her father; the others died in their infancy.

In addition to the works which we have already mentioned, he published the following:—'Oratio de Vitâ et Obitu Clarissimi Bernhardi Albini,' Lugduni Bat. 1721, 4to.—'Epistola ad Ruyschium Clarissimum pro Sententiâ Malpighianâ de Glandulis,' Amstelodami, 1722.—'Atrocis nec descripti prius Morbi Historia, secundum Medicæ Artis Leges conscripta,' Lugduni Bat. 1754, 8vo.—'Atrocis Rarisimique Morbi Historia Altera,' Lugduni Bat. 1728, 8vo.

The following works have been attributed to him, but are not recognised as genuine in his own catalogue; many of them were in fact surreptitious editions of parts of his lectures, of which some did not appear till after his death:—'Tractatus de Peste,'—'Consultationes Medicæ, sive Sylloge Epistolarum cum Responsis;' the first edition was published at the Hague in 1743, but it has been frequently reprinted.—'Prælectiones Publicæ de Morbis Oculorum,' dictated by Boerhaave in 1708; Göttingen, 1746; frequently reprinted; the best edition is Haller's, printed at Venice in 1748.—'Introductio in Praxim Clinicam, sive Regulæ Generales in Praxi Clinicâ observandæ,' Lugduni Bat. 1740, 8vo.—'Praxis Medica,' Londini, 1716, 12mo.—'De Viribus Medicamentorum,' taken from the notes of his lectures in 1711 and 1712; Paris, 1723, and many other editions.—'Experimenta et Institutiones Chemicæ,' Lutetiæ, 1728, 8vo., taken from his lectures from 1718 to 1724.—'Methodus discendi Medicinam,' Amstelodami, 1726, 1734, 8vo., and other editions; enlarged by Haller, who published it in two volumes, 4to., in 1751, under the title of 'Hermani Boerhaave, Viri Summi, suiq; Præceptoris, Methodus Studii Medici emendata et Accessionibus locupletata,' Amstelodami; reprinted at Venice in 1753, two vols. 8vo. There is a useful Index rerum et verborum, by Cornelius Pereboom, which it is well to annex to it.—'Historia Plantarum quæ in Horto Academico Lugduni Batavorum crescunt,' printed at Leyden in 1712, but with Rome on the title-page. There are London editions of 1731 and 1738, taken from his lectures from 1709 to 1728.

To these we may add an anonymous 'Index Plantarum;' 'Commentaries on the Aphorisms,' 1728, 8vo.; 'A Lecture on the Stone,' London, 1740; and 'Lectures on Diseases of the Nerves,' Leyden, 1761, and Frankfort, 1762.

The works which he edited are—the works of Drelin-court; the observations of Piso; the anatomical and surgical works of Vesalius, edited in conjunction with Albinus; the 'Tractatus Medicus de Lue Venereâ, præfixus Aphrodisiaco;' the smaller anatomical works of Eustachius; Bellini 'On the Urine and Pulse;' Prosper Alpinus 'On the Prognosis of Life and Death;' and the celebrated edition of Aretæus.

Three works came out under the auspices of Boerhaave, which probably would never have been published but for his friendly aid: these are—'The Physical History of the Sea,' by Count Marsigli, Amsterdam, 1726, fol.; the 'Botanicon Parisiense,' by Le Vaillant, who when dying sent him the MS., Leyden, 1727, fol.; and Swammerdam's 'History of Insects,' printed at Amsterdam in 1737 in two vols. folio, with plates, and a preface by Boerhaave.

(*Biographie Universelle; Hutchinson's Biographia Medica.*)

BOETHIUS, ANNIUS MANLIUS TORQUATUS SEVERINUS, the most learned and almost the only Latin philosopher of his time, descended from an ancient and noble family, was born at Rome A. D. 455, forty-six years after the taking of that city by Alaric. Harris, in his 'Hermes,' observes that with Boethius the Latin tongue and the last remains of Roman dignity may be said to have sunk in the western world; and Gibbon, that he was the last of the Romans whom Cato or Tully would have acknowledged for a countryman. His father was put to death by Valentinian III., to whom he had been præfect of the palace, in the very year in which his son was born. Though deprived of his father, his other relations gave Boethius a good education, and encouraged in him an early taste for philosophy and letters. They sent him to Athens, where these studies still flourished, and where he remained for eighteen years, studying every branch of literature, but more especially philosophy and mathematics. Plato, Aristotle, Euclid, and Ptolemy were his favourite authors. Upon his return to Rome he soon attracted public attention, and the most eminent persons of the city sought his friendship, foreseeing that his merit would advance him in the state. His alliance, too, was consequently courted, and his choice at last fixed on Elpis, a lady of literary attainments, descended from one of the most considerable families of Messina, who bore him two sons.

Boethius, as was expected, soon obtained the highest honour his country could bestow; he was made consul in the year 487, at the age of thirty-two, under Odoacer, king of the Heruli, who at that time reigned in Italy. Two years after the advancement of Boethius to this dignity, Theodoric, king of the Goths, invaded the country, put Odoacer to death, and fixed the seat of his government at Ravenna. The Romans, and the inhabitants of Italy generally, became reconciled to the administration of affairs under Theodoric, who ruled them by the same laws to which they had been accustomed under the emperors; and Boethius had the singular felicity, in the eighth year of Theodoric's reign, to see his two sons, Patricius and Hypatius, raised to the consular dignity. During their continuance in office Theodoric came to Rome. He was received by the senate and people with the greatest joy, and Boethius pronounced an elegant panegyric before him in the senate. Theodoric answered in obliging terms, and promised never to encroach upon the privileges of the Senate. In the eighteenth year of Theodoric Boethius was advanced a second time to the dignity of consul. The care of public affairs did not, however, engross his whole attention. This year, as he himself informs us, he wrote his 'Commentary upon the Predicaments, or the Ten Categories of Aristotle.' In imitation of Cato, Cicero, and Brutus, he devoted the whole of his time to the service of the Commonwealth, and the cultivation of the sciences. He published a variety of writings, in which he treated upon almost every branch of literature. Besides the Commentary upon Aristotle's Categories, he wrote an explanation of that philosopher's Topics, in eight books; another, of his Sophisms, in two books; and commentaries upon many other parts of his writings. He translated the whole of Plato's works; he wrote a commentary, in six books, upon Cicero's Topics; he commented also upon Porphyry's writings; he published a discourse on Rhetoric, in one book; a treatise on Arithmetic, in two books; and another, in five books, upon Music; he wrote three books upon Geometry, the last of which is lost; he translated Euclid, and wrote a treatise upon the quadrature of the Circle, neither of which performances is now extant; he published also translations of the works of Ptolemy of Alexandria; and of the writings of the celebrated Archimedes; and several treatises upon theological and metaphysical subjects, which are extant.

The acuteness and profound erudition displayed in such a diversity of works, upon all subjects, acquired Boethius a great reputation, not only among his countrymen, but with foreigners. Gondebald, king of the Burgundians, who had married a daughter of Theodoric, came to Ravenna on a visit to his father-in-law, and thence went to Rome, not only with a view to see the beauties of the city, but that he might have the pleasure of conversing with Boethius. The philosopher showed him several curious mechanical works of his own invention, particularly two time-keepers, one of which pointed out the sun's diurnal and annual motion in

the ecliptic, upon a moveable sphere; and the other (a clepsydra) indicated the hours of the day by the dropping of water from one vessel into another. Gondobald was so well pleased with these contrivances, that upon his return home he dispatched ambassadors to Theodoric, praying that he would procure for him the two wonderful time-pieces which he had seen at Rome. The letter which Theodoric wrote to Boethius on this occasion, expressing Gondobald's importunity, and requesting the philosopher's compliance, is preserved by Cassiodorus.

During the course of these transactions Boethius lost his wife Elpis, but married a second time, Rusticianna, the daughter of Symmachus, along with whom, in the year 522, he was a third time elected consul. It was during this consulship that he fell under the displeasure of Theodoric. Theodoric was an Arian; and Boethius, who was a Catholic, published about this time a book upon the unity of the Trinity, in opposition to the Arians, Nestorians, and Eutychians. This treatise, which was universally read, made him many enemies at court, who insinuated that Boethius wanted not only to destroy Arianism, but to effect a change of government, and deliver Italy from the dominion of the Goths. From his credit and his influence he was represented as the most likely person to bring about such a revolution.

While his enemies were thus busied at Ravenna, they employed emissaries to sow the seeds of discontent at Rome, and to excite factious people to oppose him there in the exercise of his office of consul. Boethius persisted resolutely in his endeavours to promote the public welfare, but his integrity and steadiness only hastened his fall. Theodoric, corrupted probably by a long series of good fortune, began now to throw off the mask. This prince, though an Arian, had hitherto expressed sentiments of moderation toward the Catholics; but probably fearing that they had an intention to overthrow his government, he began to treat them with severity. Boethius was one of the first who became a victim to his rigour. He had continued long in favour with his prince, and was more beloved by him than any other person; but neither the remembrance of former affection, nor the absolute certainty which the king had of his innocence, prevented him prosecuting the philosopher, upon the evidence of three persons of infamous reputation. The offences laid to his charge as we are informed in the first book of the *Consolation of Philosophy*, were, 'That he wished to preserve the Senate and its authority: that he hindered an informer from producing proofs which would have convicted that assembly of treason; and that he formed a scheme for the restoration of the Roman liberty.' In proof of the last article the witnesses produced forged letters, which they averred had been written by Boethius. For these supposed crimes, as we learn from the same authority, he was, unheard and undefended, at the distance of five hundred miles, proscribed and condemned to death. Theodoric, conscious that his severity would be blamed, did not at this time carry his sentence fully into execution, but contented himself with confiscating his effects, banishing him to Pavia, and there confining him to prison.

Soon after this, Justin, the Catholic emperor of the east, finding himself thoroughly established upon the throne, published an edict against the Arians, depriving them of all their churches. Theodoric being highly offended at this edict, obliged Pope John I., together with four of the principal senators of Rome (among whom was Symmachus, the father-in-law of Boethius), to go on an embassy to Constantinople, and commanded them to threaten that he would abolish the Catholic religion throughout Italy, if Justin did not immediately revoke his edict against the Arians. John was received at Constantinople with pomp, and treated with respect. He tried to compromise matters between the two princes; but so far was he from inducing Justin to revoke his edict, that, in compliance with the tenor of it, he reconciled many of the Arian churches to the Catholic faith. Theodoric became so incensed at the conduct of Pope John and his colleagues, that, upon their return, he threw them all into prison at Ravenna. Boethius, though innocent of what was done at Constantinople, was at the same time ordered into stricter confinement at Pavia, the king having probably come to the resolution of proceeding to extremities against him.

Though confined in prison, and deserted by the world, Boethius preserved his vigour and composure of mind, and wrote during his confinement, in five books, his excellent treatise on the '*Consolation of Philosophy*,' the work upon

which his fame chiefly rests. He had scarcely concluded this work, or, according to some of his commentators had not concluded it, when, Pope John being furnished to death in prison, and Symmachus and the other senators put to death, Theodoric ordered Boethius to be beheaded. His execution took place in prison, Oct. 23, 526. His body was interred by the inhabitants of Pavia, in the church of St. Augustine, near the steps of the chancel, where his monument existed till the last century, when that church was destroyed. The tomb had been erected to him by Otho III. in 996. Theodoric, who did not long survive Boethius, is said in his last hours to have repented of his cruelty. Gibbon (*Decline and Fall of the Roman Empire*, chap. xxxix.) says, the tower of Boethius subsisted at Pavia till the year 1584.

The most celebrated production of Boethius, '*De Consolatione Philosophiæ*,' has always been admired both for the style and sentiments. It is an imaginary conference between the author and Philosophy personified, who endeavours to console and soothe him in his afflictions. The topics of consolation contained in this work are deduced from the tenets of Plato, Zeno, and Aristotle, but without any notice of the sources of consolation which are peculiar to the Christian system, which circumstance has led many to think him more of a Stoic than a Christian. It is partly in prose and partly in verse; and was translated into Saxon by King Alfred, and illustrated with a commentary by Asser, bishop of St. David's. Two manuscripts of an English version of this work made by John Walton, canon of Osney (commonly called John of Osney) in 1410 are preserved among the Harleian manuscripts in the British Museum. Chaucer and Queen Elizabeth were also translators of Boethius's treatise '*De Consolatione*;' with George Colville, or Coldewel, Richard (Graham) Viscount Preston, W. Causton, the Rev. Philip Ridpath, and R. Duncan of Edinburgh. King Alfred's translation into Saxon was published at Oxford in 8vo., 1698, by Mr. Christopher Rawlinson, and again with an English version from it by J. S. Cardale, 8vo., Lond. 1829. A translation into French by Jean de Meun, was printed at Paris by Verard in 1494. Few books were more popular than this treatise in the middle ages; and few have passed through a greater number of editions in almost all languages. The first edition of Boethius '*De Consolatione*,' was printed at Nuremberg in 1476, in folio. The best edition of Boethius's whole works is that 'cum commentariis, enarrationibus, et notis Jo. Murelii, Rodolphi Agricolæ, Gilberti Porretæ, Henrici Lorriti Glareani, et Martiani Rotæ,' printed in 2 vols. folio, at Basle in 1570. (See the life prefixed to Ridpath's translation of the Treatise *De Consolatione*, 8vo., Lond. 1785; Chalmers's *Biogr. Dict.*, vol. v. p. 509-514; Fabric. *Bibl. Lat.* 4to. Ven. 1728, tom. ii. p. 146-165; Bruckeri *Historia Philos.*; and Baillet, *Vies des Saints*, vol. xiii. p. 365, in which work '*Saint Boece*' is included, '13 Octobre.')

BOG. The name of bog has been given indiscriminately to very different kinds of substances. In all cases the expression signifies an earthy substance wanting in firmness or consistency, which state seems to arise generally (perhaps not always) from the presence of a superabundant supply of moisture having no natural outlet or drain.

In some cases, where springs of water, or the drainage from an extensive area, are pent up near the surface of the soil, they simply render it soft or boggy, and in this state the land is perhaps more properly called a quagmire. A second state of bog is where, in addition to the condition just described, a formation of vegetable matter is induced, which dying and being reproduced on the surface, assumes the state of a spongy mass of sufficient consistence to bear a considerable weight. Bogs of this description are numerous and extensive in Ireland, where they are valuable from the use made of the solid vegetable matter, both as fuel and as a principal ingredient in composts for manures. Where the turf has been cut away for these purposes, several bogs have been reclaimed by draining; and the subsoil is then readily brought into cultivation. Bogs also occur in all parts of Great Britain where the form of the surface and the nature of the earth favour the general condition under which bog is formed. Thus there are bogs on the high granitic plateau of Cornwall, on the road from Launceston to Bodmin; and in the large granitic mass, of which Brown Willy is the centre, the bottoms of the valleys are covered with bogs, the lower part of which is consolidated into peat.

Although peat moss always springs from some moist spot, it will grow and spread over sound ground, and if not stopped by some natural or artificial impediment, such as a wall, would overrun whole districts. In this case it absorbs any moisture which reaches it, and retains it like a sponge.

The depth of a bog depends on the level of the surrounding grounds. It cannot rise much higher than the lowest outlet for the water. Where there is no immediate outlet the bog increases, until the evaporation is equal to the supply of the springs and rains, or till it rises to a level with its lowest boundary, where it becomes the source of a stream or river, and forms a lake. The mud being deposited at the bottom, gradually becomes a true peat, or is quite reduced to its elementary earths. In this case it may become a stratum of rich alluvial soil, which some convulsion of nature may lay dry, for the benefit of future ages. From this circumstance has arisen the great advantage of draining bogs, to which the attention of agriculturists and men of science has often been profitably directed. This subject is treated in the article on DRAINING.

The bogs of Ireland are estimated in the whole to exceed in extent two millions eight hundred thousand English acres. The greater part of these bogs may be considered as forming one connected mass. If a line were drawn from Wicklow head on the east coast to Galway, and another line from Howth head, also on the east coast, to Sligo, the space included between those lines, which would occupy about one-fourth part of the entire superficial extent of Ireland, would contain about six-sevenths of the bogs in the island, exclusive of mere mountain-bogs, and bogs of no greater extent than 800 English acres. This district resembles in form a broad belt drawn from east to west across the centre of Ireland, having its narrowest end nearest to Dublin, and gradually extending its breadth as it approaches the western ocean. This great division is traversed by the river Shannon from north to south, which thus divides the great system of bogs into two parts. Of these, the division to the west of the river contains more than double the extent of bogs in the eastern division, so that if we suppose the whole of the bogs of Ireland (exclusive of mere mountain-bogs, and of bogs of less extent than 800 acres) to be divided into twenty parts, twelve of these parts will be found in the western division, and five parts in the eastern division of the district already described, while, of the remaining three parts, two are to the south and one to the north of that district.

The smaller bogs, excluded from the foregoing computation, are very numerous in some parts. In the single county of Cavan there are above ninety bogs, not one of which exceeds 800 English acres, but which collectively contain about 11,000 Irish, or 17,600 English, acres, without taking into the account many bogs, the extent of which is from five to twenty acres each.

Most of the bogs which lie to the eastward of the Shannon, and which occupy a considerable portion of the King's County and the county of Kildare, are generally known by the name of the Bog of Allen. It must not however be supposed that this name is applied to any one great morass; on the contrary, the bogs to which it is applied are perfectly distinct from each other, often separated by high ridges of dry country, and inclining towards different rivers as their natural directions for drainage.

The surface of the land rises very quickly from the Bog of Allen on all sides, particularly to the north-west, where it is composed, to a considerable depth, of limestone gravel, forming very abrupt hills. In places where the face of the hills has been opened the mass is found to be composed of rounded limestone, varying in size from two feet in diameter to less than one inch; the largest pieces are not so much rounded as the small, and frequently their sharp angles are merely rubbed off. They are usually penetrated by contemporaneous veins of Lydian stone, varying in colour from black to light grey. The colour of the limestone is usually light smoke grey, rarely bluish black: when it is bluish black, the fracture is large conchoidal; that of the grey is uneven, approaching to earthy. The Lydian stone, when unattached to the limestone, has usually a tendency to a rhomboidal form, sometimes cubical; the edges are more or less rounded; the longitudinal fracture is even, the cross fracture is conchoidal.

The Grand Canal from Dublin to Shannon Harbour passes through a considerable part of the great bog-district of Ireland. In forming this canal it was necessary to make

considerable embankments, the surface-water of the canal being generally on a higher level than the surface of the immediately adjoining bogs. Where this was not the case advantage was taken of the circumstance to conduct the drainage of the bogs into trenches for the supply of the canal.

The bogs situated to the south of the great belt in the centre of Ireland occur in Tipperary, Kilkenny, Clare, and Queen's County; those to the north of that belt occur in Antrim, Down, Armagh, Tyrone, and Londonderry.

It appeared from the examination of the surveyors appointed by parliament in 1810 to investigate the nature and extent of the bogs in Ireland, that they consist of 'a mass of the peculiar substance called peat, of the average thickness of twenty-five feet, no where less than twelve, nor found to exceed forty-two—this substance varying materially in its appearances and properties in proportion to the depth at which it lies: the upper surface is covered with moss of various species, and to the depth of about ten feet is composed of a mass of the fibres of similar vegetables in different stages of decomposition, proportioned to their depth from the surface, generally however too open in their texture to be applied to the purposes of fuel; below this generally lies a light blackish-brown turf, containing the fibres of moss, still visible though not perfect, and extending to a further depth of perhaps ten feet under this. At a greater depth the fibres of vegetable matter cease to be visible, the colour of the turf becomes blacker, and the substance much more compact, its properties as fuel more valuable, and gradually increasing in the degree of blackness and compactness proportionate to its depth; near the bottom of the bog it forms a black mass, which when dry has a strong resemblance to pitch or bituminous coal, having a conchoidal fracture in every direction, with a black shining lustre, and susceptible of receiving a considerable polish.'

The surface of Irish bogs is not in general level; indeed it is most commonly uneven, sometimes swelling into hills and divided by valleys, thus affording great facilities for drainage. None of the bogs of Ireland which have been described occur on low ground, a fact which seemed to strengthen the opinion of their having always originated from the decay of forests. This theory of the original formation of bogs was at one time very generally adopted, but the result of more recent investigations shows that it cannot be supported. That some bogs may have been formed in this manner is not denied. It is stated in the *Philosophical Transactions*, No. 275, that—'The Romans under Ostorius, having slain many Britons, drove the rest into the forest of Hatfield (in Yorkshire), which at that time overspread all the low country; and the conqueror, taking advantage of a strong south-west wind, set fire to the pitch trees of which the forest was chiefly composed, and when the greater part of the trees were thus destroyed, the Roman soldiers and captive Britons cut down the remainder, except a few large ones, which were left growing as remembrancers of the destruction of the rest. These single trees did not long withstand the action of the winds, but falling into the rivers intercepted their currents, and caused the waters to rise and flood the whole flat country; hence the origin of the mosses and moory bogs which were afterwards formed there.' This moorland near Hatfield, seven miles north-east of Doncaster, and about Thorne, is now a boggy peat covered with heath, several feet higher than the adjoining land, and very wet; whence it has been aptly compared to a sponge full of water. The Thorne waste with some adjacent tracts, and the Hatfield moor, contain about 12,000 acres.

In the *Ordnance Survey of the County of Londonderry*, presented by Lord Mulgrave to the British Association during its recent meeting (Aug. 1835) in Dublin, are some remarks on the subject which are deserving of attention:—

'In the production of bog, *sphagnum** is allowed on all hands to have been a principal agent, and superabundant moisture the inducing cause. To account for such moisture various opinions have been advanced, more especially that of the destruction of large forests, which, by obstructing in their fall the usual channels of drainage, were supposed to have caused an accumulation of water. That opinion however cannot be supported; for, as Mr. Aher remarks in the *Bog Reports*, such trees as are found have generally six or seven feet of compact peat under their roots, which are found standing as they grew, evidently proving the formation of peat to have been previous to the growth of the trees,

* *Sphagnum palustre*.

a fact which, in relation to firs, may be verified in probably every bog in this parish, turf from three to five feet thick underlying the lowest layer of such trees. This fact is indeed so strongly marked in the bog which on the Donegal side bounds the road to Muff, that the turf-cutters, having arrived at the last depth of turf, find timber no longer, though formerly it was abundant, as is proved by their own testimony from experience, and by the few scattered stumps which still remain resting on the present surface. Not so however with oaks, as their stumps are commonly found resting on the gravel at the base, or on the sides of the small hillocks of gravel and sand which so often stud the surfaces of bogs, and have by Mr. Aher been aptly called islands. He further adds that in the counties of Tipperary, Kilkenny, &c., they are popularly called *derries* (signifying a *place of oaks*), a name deserving attention, whether viewed as expressive of the existing fact, or as resulting from a lingering traditionary remembrance of their former condition, when, crowned with oaks, they were distinguishable from the dense forest of firs skirting the marshy plains around them. The strong resemblance to antient water-courses of the valleys and basins which now contain bogs, and the occurrence of marl and shells at the bottoms of many, naturally suggest the idea of shallow lakes, a view of the subject adopted in the *Bog Reports* by Messrs. Nimmo and Griffiths. Such lakes may have originated in the natural inequalities of the ground, or been formed by the choking up of channels of drainage by heaps of clay and gravel, or they may have been reduced to the necessary state of shallowness by the gradual wearing away of obstacles which had dammed up and retained their waters at a higher level.

The probable process of the formation of bog in such cases is thus explained in the *Ordnance Survey*:—'A shallow pool induced and favoured the vegetation of aquatic plants, which gradually crept in from the borders towards the deeper centre. Mud accumulated round their root and stalks, and a spongy semi-fluid mass was thus formed, well fitted for the growth of moss, which now, especially *sphagnum*, began to luxuriate. This, absorbing a large quantity of water, and continuing to shoot out new plants above, while the old were decaying, rotting, and compressing into a solid substance below, gradually replaced the water by a mass of vegetable matter. In this manner the marsh might be filled up, while the central or moister portion, continuing to excite a more rapid growth of the moss, it would be gradually raised above the edges, until the whole surface had attained an elevation sufficient to discharge the surface-water by existing channels of drainage, and calculated by its slope to facilitate their passage, when a limit would be in some degree set to its further increase.'

According to the personal observations of Mr. Griffiths, made during many years, the growth of turf in these bogs is very rapid, amounting sometimes to two inches in depth in one year: this however is stated to be an excessive growth under peculiarly favourable circumstances.

The roots which were attached to the ground decay, and the whole of the surface becomes a floating mass of long interlaced fibres, which when taken out has been significantly called in Ireland *old wives' tow*. The black mass of the bog is a mud almost entirely formed of decomposed vegetable fibres, but not of sufficient specific gravity to sink to the bottom; thus producing that semi-liquid state which distinguishes a quaking bog from a peat moss. The vegetation which continues on the surface and at some depth below, has the appearance of a fine green turf. In many cases the roots are so matted together, and so strong, as to form a web capable of bearing the gentle and light tread of a man accustomed to walk over bogs, bending and waving under him without breaking; and while a person unskilfully attempting to walk upon it would infallibly break through and be plunged in the bog, like a venturesome skater on unsound ice, the practised *bog-trotter*, with proper precautions, passes over them in safety. This has often been of considerable advantage in war, or in the pursuit of illegal employments. The fugitive escapes over his native bogs, where the pursuer cannot venture to follow, or if he does, he generally pays the penalty of his ignorance or rashness, by sinking in them. Many examples of this were witnessed in Ireland during the last rebellion, and many bodies have been found in bogs years after, preserved from decay, and tanned in a manner by the astringent principle, which is always found where vegetable fibre has been decomposed under water.

When bogs become consolidated or compressed, they are called peat-mosses. The consolidation here mentioned must be carried to a considerable extent before the soil is capable of sustaining such a growth of timber as it is seen to have frequently borne.

'Successive layers of trees (or stumps) in the erect position, and furnished with all their roots, are,' as stated in the *Ordnance Survey*, 'found at distinctly different levels, and at a small vertical distance from each other. It appears that the consolidation of the lower portion of the turf was a necessary preparation for the first growth of timber, and considering the huge size of the roots thrown out by these trees, and the extent of space over which they spread, the mode is readily perceived by which they obtain a basis of support sufficiently firm and extensive to uphold their rising and increasing stems. The first layer of turf was now matted by the roots, and covered by the trunks of the first growth of timber, but as the bog still continued to vegetate, and to accumulate round the growing stem, a new layer of turf was created to support a second growth of timber, the roots of which passed over those of the preceding, and so on with a third or more, until at length the singular spectacle was exhibited of several stages of trees growing at the same time. Such seems a natural way of viewing the subject, but it is often stated that one stump is found actually on the top of another, which would imply that the lower tree had been destroyed before the turf had ascended to the level of the broken stump. In such an instance, using Mr. Griffiths' example of the rate of increase of recent bog, and supposing it compressed by growth into one-fifth of its original bulk, little more than one hundred years would have elapsed between the two periods.'

An extensive tract of peat-moss (Chatmoss) in the county of Lancaster has lately attracted public attention from the circumstance of the Liverpool and Manchester Railway having been carried through it. The length of Chatmoss is about six miles, its greatest breadth about three miles, and its depth varies from ten to upwards of thirty feet, the whole of which is pure vegetable matter throughout, without the slightest mixture of sand, gravel, or other material. On the surface it is light and fibrous, but it becomes more dense below. At a considerable depth it is found to be black, compact, and heavy, and in some respects resembles coal: it is in fact exactly similar to the composition of the bogs of Ireland, as already described.

The moss is bounded on all sides by ridges of rolled stones mixed with clay, which prevent the immediate discharge of its waters. It is probable that this bar, by interrupting the course of the waters, originally caused the growth of Chatmoss. This moss presents at its edges nearly an upright face; the spongy surface of the moss being elevated at a very short distance from the edge from ten to twenty feet above the level of the immediately adjoining land. The immediate substratum to the bog is a bed of siliceous sand, which varies from one to five feet in thickness, below which is a bed of bluish and sometimes reddish clay marl of excellent quality. This marl varies in thickness very considerably; in some parts it is not more than three feet, in others its depth has not been ascertained; below the marl is a bed of sandstone gravel of unknown thickness. It is this bed of gravel which extends beyond the edge of the bog, and prevents the direct discharge of the waters from the flat country to the north into the river Irwell. The depth of Chatmoss varies from fifteen to thirty feet. (See also Camden's remarks on this moss, vol. ii. p. 966, Gibber's edition.)

About 1797 the late Mr. Roscoe of Liverpool began to improve Trafford moss, a tract of 300 acres, lying two miles east of Chatmoss, which operation was so successful as to encourage him to proceed with the improvement of Chatmoss, the most extensive lowland bog in England, including 7000 acres. After first constructing sufficient drains, the heath and herbage on the moss were burnt down as far as practicable; a thin sod was then ploughed with a very sharp horse-plough, burned in small heaps, and the ashes spread around. Being then tolerably dry, and the surface level, the moss was ploughed six inches deep, and the necessary quantity of marl, generally not less than 200 cubic yards to the acre, was set upon it. When this began to crumble and fall by the action of the sun or frost, it was spread over the land with great exactness, and the first crop was put in as speedily as possible, with the addition of about twenty tons of manure to the acre. This first

crop, which must be put in with the plough, or with the horse-scuffle or scarifier, may be either a green crop, as potatoes, turnips, &c., or any kind of grain. After making a great variety of experiments Mr. Roscoe gave it as his decided opinion, 'that the best method of improving moss-land is that just stated, of the application of a calcareous substance, in sufficient quantity to convert the moss into a soil, and by the occasional use of animal or other extraneous manures, such as the course of cultivation and the nature of the crops may be found to require.' The cost of marling was stated by Mr. Roscoe at 10*l.* per acre, at which cheap rate it would not have been possible to have performed the work but for the assistance of an iron railway, laid upon boards or sleepers, and moveable at pleasure. Along such a road the marl was conveyed in waggons with small iron wheels; each waggon, carrying about 15 cwt., was drawn by a man, and this quantity was as much as, without the employment of the railway, could have been conveyed over the moss by a cart with a driver and two horses.

In June, 1833, an antient wooden house was discovered in Drunkelin Bog, in the parish of Invernon, near the north coast of the county of Donegal in Ireland, by James Kilpatrick, while he was searching for bog timber. The description of the house and the other circumstances connected with it were given by Captain Mudge, who was then engaged in surveying the coast, to the Hydrographer of the Admiralty, and by him communicated to the Society of Antiquaries in the November following. The roof of the house was four feet below the present surface of the bog; but it is estimated, by comparing the present surface with that of adjacent parts from which no peat has been taken, that the top of the roof must have been about sixteen feet below the surface before any peat was removed. The framework of the house was very firmly put together, without any iron; the roof was flat and made of thick oak planks. The house was twelve feet square and nine high: it consisted of two floors one above the other, each about four feet high; one side of the house was entirely open. The whole stood on a thick layer of sand spread on the bog, which continues to the depth of fifteen feet below the foundation of the house. Captain Mudge supposes that a stone chisel, which was found on the floor of the house, had been used in making the grooves and holes in the timbers, as the chisel corresponded exactly to the cuts and holes. When the house was removed from the bog, and a drain had been opened to carry off the water which flowed into the hollow, a paved pathway was traced for several yards, at the end of which was discovered a hearthstone made of flat freestone slabs. The hearthstone was covered with ashes, and near it were several bushels of half-burnt charcoal, with nut-shells, some broken and others charred, besides some blocks of wood partly burned. On the same level as the foundation of the house stumps of oak trees were found standing, just such as had supplied the timber of the house; and beneath all this, as already observed, there are still fifteen feet of peat. It is the opinion of Captain Mudge that this house must have been suddenly overwhelmed by boggy matter, a conclusion which appears necessary to explain all the circumstances.

Bogs not unfrequently burst out and suddenly cover large tracts. This phenomenon happened in the present year (1835) in Ireland on a part of Lord O'Neill's estate, on the Ballymena road, in the neighbourhood of Randalstown. On the 19th September an individual near the ground was surprised by hearing a rumbling noise as if under the earth, and immediately after a portion of the bog moved forward a few perches, when it exhibited a broken, rugged appearance, with a soft peaty substance boiling up through the chinks. It remained in this state until the 22nd, when it again moved suddenly forward, covering corn-fields, potato-fields, turf-stacks, hay-ricks, &c. The noise made by its burst was so loud as to alarm the inhabitants adjoining, who, on perceiving the flow of the bog, immediately fled. It directed its course towards the river Maine which lay below it; and so great was its force, that the moving mass was carried a considerable way across the river. Owing to the heavy rain which had fallen for some time previously, the river forced its channel through the matter deposited in its bed, and considerable damage was thus obviated, which would otherwise have occurred from the forcing back of the waters. It is stated that upwards of 150 acres of arable land have been covered by this outbreaking of the bog.

BOG-EARTH, is an earth or soil composed of light siliceous sand and a considerable portion of vegetable fibre in a half decomposed state, such as is often found accumulated over an impervious substratum, where the waters have deposited the mud carried off from boggy places. It is in high repute with gardeners, being excellent for flowers, especially for some American plants, which thrive best in such a soil. The most fertile kind consists of nearly 25 per cent. of vegetable matter, and when mixed up with good mould, and if necessary with some quicklime, to promote the further decomposition of the fibres, it is far superior to any artificial manure. Where it is not to be obtained in a natural state, it is easily imitated artificially, by mixing the mud of ponds or ditches, where the soil is light, in pits, with leaves, weeds, and grass, keeping the mixture well watered and frequently turned. It must then be exposed to the air for a considerable time in heaps, until the requisite texture is produced. Some sharp sand is an essential ingredient, and must be added if there is none in the soil.

BOG or BUG. [VISTULA.]

BOG (the *Hypanis* of the Greek and Roman writers), a considerable tributary of the Dnieper, rises to the south of Proskuroff, south-east of Tarnopol in Podolia, in the elevated plateau which extends from the Carpathian Mountains to Kieff, and receives the waters of the Ingul, Balta, Tshertal, and Salonicha before it quits the territory of Podolia. Thence it flows in a south-easterly direction towards Nikolaieffsk, bounded on its right bank by the high land. It descends by a succession of falls in the vicinity of Sekolnie, into the low country which lies between its left bank and the right bank of the Dnieper, where it winds its way through a liman, formed by its own inundations, nearly fifty miles in length, and falls into the Dnieper to the east of the town of Oczakoff. It is between 470 and 480 miles in length, and in the latter part of its course attains a breadth of 500 feet; but its bed is so much obstructed by rocks and sandbanks, that it is only navigable when its waters are much swollen. The Senintha falls into the Bog at Olviopol, in the Russian province of Cherson, and the Yekul at Nikolaieffsk, or Sebastopol, in the same province. By the treaty between Russia and Turkey in the year 1774, the Bog became the line of frontier between the two countries, from the mouth of the Seninka to the Black Sea; but the encroachments made by the Muscovite upon the Ottoman in more recent times have now brought the whole course of the Bog within the Russian territory. Its current is extremely gentle, and its waters, in its lower course, are of a saline taste. (Herod. iv. 52.) The principal towns situated on its banks are Bratzlaff, Bobopol, Olviopol, Vosnesensk, and Nikolaieffsk. [DNEPER.]

BOGDANOVITCH, HIPPOLYTUS THEODOROVITCH, was born December 3rd, 1743, in the town of Perevolotchna in Little Russia, where his father practised as a physician. When eleven years old he was sent to Moscow to be educated in the College of Justice, where he soon began to display a passionate fondness for poetry and the drama. So greatly was he for a time captivated by the latter, that at the age of fifteen he determined to make the stage his profession, and for that purpose presented himself to Kheraskov, the author of the *Rossiada*, and at that time the director of the Moscow theatre. Regarding this application as a boyish freak, Kheraskov represented to him the impropriety of the step he was anxious to take, but at the same time was so struck by the youth's manner and intelligence, that he exhorted him to pursue his studies, and proffered his assistance and instruction in literary composition. Bogdanovitch had the good sense to adopt this friendly counsel, and forthwith began to apply himself diligently to the acquirement of foreign languages and the perusal of the best authors. His own industry was seconded by the judicious advice and good taste of Kheraskov, with whom he had now taken up his abode; and he began to try his pen in some pieces which were published in the University Journal entitled *Polesnoe Uveselenie* (Profitable Recreation).

In 1761 he was appointed inspector at the university of Moscow, and also translator in the foreign office; but in less than two years he went with Count Bieloselsky as secretary of legation to Dresden. During his residence in that city he wrote, at least commenced, his delightful poem entitled 'Dushenka,' for it was not published till long afterwards—1775. It is upon those three cantos that his reputation rests, and they earned for him celebrity and favour on their first appearance. The Empress Catherine

was charmed with a production, so unlike any thing that had preceded it in the language; and it almost immediately became a favourite with all classes. Its author became the idol of the court and the public: this rather intoxicating popularity did not inspire him with increased confidence in his own powers, but seems rather to have chilled his invention; for although he afterwards wrote much, he never attempted anything else in the same vein, nor produced anything that was calculated to win a second wreath for the author of 'Dushenka.' Even that poem itself is more distinguished by felicity of execution than by originality of subject or materials, its fable being the mythological story of Psyche, which has been variously treated by different writers from the time of Apuleius to the present day, but by none perhaps has it been verified more elegantly than by Bogdanovitch. He bestowed upon the narrative all the captivating graces of style in a language which, although it could boast of many productions marked by the lofty eloquence of poetry, did not, until then, contain any finished model of playfulness of language and a tone of refined vivacity. It is not to be wondered at, therefore, that it should have obtained as many admirers as readers, and almost as many readers as there were persons capable of perusing it. It was a phenomenon in their literature, of which the Russians were proud, and they have accordingly rather overrated than undervalued it. This partiality displays itself sufficiently in Koramzin's remarks on the poem; yet although criticism cannot go to the full extent of its eulogium, it will allow that there are many positive beauties in it, as well as striking comparative excellence. Some idea of its peculiar attraction may best be conveyed by saying that it is in the Russian language what Moore's poetry is in our own: its characteristics are a flowing sweetness of poetic diction, and a captivating ease and felicity of expression. There is also something of the same mingled gaiety and tenderness, of the same liveliness of fancy which pervades the poems of the English or Anglo-Irish bard. Had Anacreon written the legend of Psyche, he would probably have taken the same view of it that Bogdanovitch has done, who has thrown over the whole a gay and lively colouring, but is deficient in the pathos requisite to give full effect to some of the incidents.

Notwithstanding his early predilection for the stage, Bogdanovitch wrote only two dramatic pieces, one of them a comedy in verse entitled the 'Joy of Dushenka.' Except many short poetical productions and other contributions to various journals, by far the greater part of his remaining publications consist of translations.

In 1795 he retired from St. Petersburg with the salary of president of the archives continued to him as a pension, and passed his latter years in the peaceful solitude of Little Russia, where he died on the 8th of December, 1803, leaving a name which has yet obtained no rival or associate in that particular species of poem with which he was the first to adorn the literature of his country.

BOGERMAN, who signed himself Johannes Bogermanus Pastor Ecclesiæ Leowardensis, Synodi Dortrechtanæ Præses, was born A.D. 1576, in the village of Oplewert in Friesland, and studied divinity at Heidelberg and Geneva, then the two principal seats of reformed theology. At Geneva he became imbued with the intolerant principles of the then octogenarian Beza. When Bogerman became minister at Snoek, he showed his own intolerance by endeavouring to compel the Mennonites there to a recantation. In 1604 he was made minister at Leeuwarden. In the polemics of his age he joined Gomarus against Arminius. He approved, translated, and commented on Beza's work on the capital punishment of heretics. He also wrote a 'Mirror of the Jesuits,' in Dutch, Leeuw. 1608, 4to.; a polemical work against Grotius, about or before 1614; and other polemical works which are now forgotten. In 1617 he effected the deprivation of a preacher who held Remonstrant opinions, and greatly contributed to the victory of the Gomarists, or Contra-Remonstrants, over the Remonstrants, or Arminians. He was not without learning, but obtained celebrity especially by his zeal against the Remonstrants. Count William Lewis of Nassau, an enemy to the Remonstrants, recommended Bogerman to the stadtholder Maurice, who, for political reasons, opposed the Remonstrants. Bogerman is said to have published an essay in which he endeavoured to prove that heretics deserve capital punishment, but we suppose this to be the above-mentioned translation of Beza's tract, to which Bogerman and Geldorp wrote

a preface. Bogerman the president, and four other members of the synod of Dort, were commissioned to translate the Bible. Their translation, especially that of the Old Testament, is chiefly Bogerman's work. It is still used in the churches of Holland, and is admired for its correctness, oriental taste, and purity of language. It is said that Bogerman declined some lucrative invitations to the Hague and to Amsterdam, in order that he might devote his time to this translation of the Bible. But the esteem in which he was held was not uniform among the members of the synod. The foreign members complained that he and his followers formed a separate synod among themselves, which had its separate meetings, in which they agreed upon measures which they wished to carry. Davenantius proposed that the debates of the synod should be published, but Bogerman opposed this motion successfully. The synod gave to Bogerman six assistants for drawing up the decrees, one of whom, Johannes Deodatus, said, that the canons of the synod of Dort had taken off the head of Barneveldt.

When Bogerman returned home he was sharply reproved by the states and the synod of Friesland, to which province he belonged. He was also accused of having exceeded his instructions, and it was proposed to depose him from his office. On his complaining of ingratitude and of being ill-rewarded for all his exertions, in which he had sacrificed his health at Dortrecht, it was replied that he had manifestly been well pleased with his daily stipend of thirteen gulden, otherwise he would not have brought into account twenty-nine days more than he could do with propriety, namely, the days of vacations. This was the same thing as accusing him of having defrauded the government of 377 gulden. But this seems to be inconsistent with the good report of his general disinterestedness. We therefore suppose this accusation to have arisen from that party spirit which his fanaticism had so strongly provoked. Bogerman remained a partisan of the stadtholder Maurice, and wrote an account of his death. Bogerman died in 1633, as professor primarius at Franeker.

(See the second volume of Brandt's *Historia der Reformation*—this work has been translated into English and into French; *Le Clerc, Hist. der Vereenigde Nederl.* ii. d. bl. 441; *E. L. Vriemont's Athenæ Frisiacæ*, p. 284; *Von Kampen, in Encyclop. von Ersch und Gruber*; *The Works of Arminius*, translated by James Nicholls, i. pp. 443, 444; *Acta Synodi Nationalis Dortrecht habitæ*, Lugd. Bat. 1620, fol.; *Geschichte der Synode von Dordrecht* von Matthias Graf, Basel, 1825, 8vo. pp. 79—85; *Arnold's Ketzergeschichte*; *Stuart on the Life of Arminius*, in the Biblical Repository, Andover, 1831; *Letters of John Hale*.)

BOGLIPORE (BHAGELPUR), a district in the province of Bahar, formerly known as the circar of Monghur, comprehending in its south-east quarter the territory of Rajamahall, which forms a part of the Mogul province of Bengal. Boglipore is bounded on the north by Tirhoot and Purneah, on the east by Purneah and Moorsshedabad, on the south by Birbhoom and Ramghur, and on the west by Ramghur and the district of Bahar. The district therefore lies between 24° and 26° N. lat. and 86° and 88° E. long., and occupies the south-eastern corner of the province of Bahar. Its greatest length in the N.N.W. direction is about 133 miles, and its greatest breadth is about 80 miles: its total area is about 8200 English square miles, as laid down by Major Rennell; but the boundaries, as is very common in Hindustan, are not very accurately defined, except in partial cases, where the courts of justice have been called upon to determine the disputes of rival zamindars.

The district contains several chains and groups of hills, which form part of the Vindhya mountains. The two principal groups are situated respectively near the north-east and north-west limits of the district. The former, which are near Rajamahall, are tolerably well cultivated, but the hills to the west are for the most part waste, and in many places almost impenetrable, the natives having in former times allowed the trees and underwood to grow as a protection to their strongholds.

A considerable part of the surface of the level land is occupied by mere rock, and is altogether incapable of cultivation. In other parts the ground is studded at intervals with fragments of rock of various sizes. On the western hills similar masses of rock occur so frequently, that, when the declivity would admit of the use of the plough, these rocks render such a mode of cultivation impracticable. It has been estimated that the level ground in this condition

is upwards of 1700 square miles, and that the hills which are uncultivable are to the extent of 1150 square miles. The remaining portions, which are fit for the plough, consist of rich and productive soil. In the north-eastern part of the district, on the level lands overflowed by the Ganges, opposite to Purneah district, are spots from which the washermen of the vicinity collect carbonate of soda, which they call *karica mati*. The saline matter effloresces on the surface in the month of October after the retirement of the waters of the Ganges, and may be collected several times from the same spot. It is remarked that no particle of this substance is formed after rains, but only follows the inundations of the river, and also that on digging to a small depth pure water unimpregnated with the carbonate of soda is obtained.

The Ganges flows to the eastward through the district of Boglipoore from above Monghir (where it forms the boundary between this district and Tirhoot) to the north-eastern corner of the Rajamahal territory. The district is besides watered by many small streams which fall into the Ganges on each side. The largest of these streams are the Keyul, the Maura, the Ulayi, the Nagini, the Augjana, the Naeti, the Baghdar, the Ghorghat, the Mohane, the Baruya, the Bilasi, the Dabee, and the Mootjarna. None of these streams are navigable except during the flooding of the Ganges, when some of them are used by small boats and for floating down timber and bamboos. In the dry season, unless near their sources, the channels of most of these rivers are dry. There are besides many jeels or stagnant pools, apparently the old channels of rivers which have found other outlets, and in many of these jeels water is found throughout the year. One of them, called Domjala, situated to the south of Rajamahal, is in the rainy season seven and a half miles long and three and a half miles broad, and even in the dry season is four miles long by one and a half mile broad.

From June to the following February the wind blows almost constantly from the east; during the other four months of the year the west wind prevails. These westerly winds are the most violent, and are often extremely dry and parching. The winters are less cold than in the adjoining district of Purneah, and the summer season is frequently most oppressively hot.

Besides Boglipoore, the capital, the district contains the towns of Rajamahal, Champanagur, Surajeghur, Colgong, Monghir, Bogwangola, and Oudanulla. The population consists of rather more than two millions, of whom 460,000 are Mohammedans, and the remainder Hindus. The inhabitants are very unequally distributed, some pergunnahs overflowing with people, while other parts, as already described, are mere wastes and almost deserted.

The mountaineers residing to the south and west of Rajamahal in this district are described as an uncivilised race, differing in manners, customs, and religion from the inhabitants of the surrounding plains, never submitting to the native governments, subsisting by plunder, often desolating the neighbouring districts by their incursions, and only kept in order by means of certain pecuniary allowances made to their chiefs on the condition of their preserving the peace of the country. In the year 1782 the privilege was granted to them of having criminal justice administered by an assembly of their chiefs, under the superintendence of a European magistrate, and subject, in certain cases, to confirmation of the governor-general in council. This latter description of control was, in 1796, transferred to the Court of Nizamut Adaulut. By a regulation passed in the year just mentioned, the resident magistrate was directed to convene the hill-chiefs twice in each year for the purpose of forming a court for the trial of criminal offenders. At the same time the custom which had previously been followed by these people of giving to the next of kin of a murdered person the right of pardoning the murderer, or of demanding retaliation or pecuniary compensation, was abolished, and murderers were in all cases brought under the jurisdiction of the court already described. All sentences, the severity of which exceeded fourteen years' imprisonment, were referred for confirmation to the Supreme Court of Nizamut Adaulut in Calcutta. A further alteration in regard to the distribution of justice among these people was made in 1827, when, by a regulation of the supreme government, the hill-people of Boglipoore were declared amenable to the general regulations of the province, with this modification however, that in criminal trials a committee of not less than three hill-chiefs,

called *Manjees*, were to sit as assessors, and to declare their opinion, according to the laws and customs of the hills, which was to be subject to the confirmation of the judge of circuit before whom the trial was had. The *Manjees* were to be summoned to the number of not less than twelve whenever a prisoner of the hill-tribes was committed for trial, and the chiefs acting as assessors were to be selected by ballot from among those summoned. The three first selected might be challenged peremptorily, and any others for reasons assigned by the prisoner.

Unqualified slavery exists throughout the district, and the owner may sell his slaves in any way he chooses. In general these people are well used, and they are said to be industrious.

Great numbers of pilgrims, soldiers, and European travellers are continually passing through the district both by land and by water, and this forms a principal source of profit to the inhabitants, who furnish travellers with provisions and other necessary articles of consumption. It is estimated that at certain seasons as many as 100 passage-boats stop in one day at Rajamahal alone.

Rice, wheat, barley, and maize form the principal articles of agricultural produce, their relative importance being in the order in which they are here named. Potatoes are cultivated about the towns of Monghir and Boglipoore. The growth of cotton is not sufficient for supplying the looms in the district. Small quantities of silk and saltpetre are produced, and about 7000 maunds of indigo are exported annually on an average.

Black bears are found in the woods, but rarely occasion any harm. There is another species of these animals, called by the natives hard-bears, which subsist on frogs and white ants, with other reptiles and insects. A species of baboon, the *Hunimaun*, exists in considerable numbers, and commits great depredations with impunity, being held so sacred by the inhabitants, that to kill one is considered as a crime, sure to be followed by ill luck. The *Ratuya*, a short-tailed monkey, is likewise common, but as he does not hold a sacred character in the eyes of the natives, he is not suffered to commit depredations with impunity.

(Tennant's *Indian Recreations*; Rennell's *Memoir of a Map of Hindustan*; Regulations of the East India Company, as contained in the Appendix to the Judicial Division of the Report of the Committee of the House of Commons on the Affairs of the East India Company, 1832.)

BOGLIPOORE, the capital of the district last described, is a town of modern erection, beautifully situated on the right bank of the Ganges, in 25° 13' N. lat., and 86° 58' E. long. The town consists of about 5000 dwellings, and contains about 30,000 inhabitants, the greater part of whom are Mohammedans. A small number of persons, about fifty, who profess the Christian religion according to the ritual of the Church of Rome, have a church in Boglipoore. These people are partly the descendants of Portuguese settlers, and partly native converts. They are under the spiritual charge of a Romish priest, a native of Milan, sent by the society *De Propaganda Fide*, who likewise numbers among his flock a small society of Roman Catholics in the adjoining district of Purneah.

A Mohammedan college exists in the town, but is now in a state of decay. A school was established here in 1823, under the patronage of the supreme government in Calcutta, and is supported by the public money. The object of this school, when first established, was the instruction of native soldiers and their children. For some few years after its formation, the success of this school was doubtful, and at one time it was proposed to discontinue it; other counsels prevailed however, and the plan first adopted was enlarged in 1828, so as to admit the children of persons not attached to the army. In 1830 the school contained 134 pupils, the greater part of whom were children of chiefs from the hills; and as these scholars are quite free from the prejudices of caste, and apply themselves readily to learn the English language as a qualification for their appointment to public offices, there is reason to hope that the institution may prove instrumental towards the civilization of the people to whom these scholars belong.

The few houses in the town which are inhabited by Europeans are handsomely built, and the Mohammedan mosques are also ornamental buildings, but with these exceptions the dwellings are of a mean character, and are generally scattered about without order.

About a mile north-west from the town there are two

round towers, supposed to be of Jain origin, which are considered sufficiently holy to be the objects of pilgrimages. [See JAIN.] Many natives visit them from a considerable distance, and for their accommodation a building has been erected near the spot by the rajah of Jeypoor, who numbers many persons of the Jain sect among his subjects.

Boglipore is 110 miles north-west from Moorshedabad.

(Report of Committee of the House of Commons in 1832 on the Affairs of the East India Company, Public Section, Appendix.)

BOGOTÀ, or, as it was called till lately, Santa Fè de Bogotà, was the capital of the Spanish vice-royalty of New Granada up to 1811, then to 1819 of the republic of Cundinamarca, afterwards of the republic of Columbia, and since its dissolution in 1831, the metropolis of the new republic of New Granada, is situated in 4° 30' N. lat., and 74° 10' W. long. Bogotà was founded by Quesade in 1538.

This town is situated at the foot of two lofty and rocky mountains, Montserrat and Guadalupe, which belong to the high range which, running nearly from N. to S., separates the affluents of the Rio de la Magdalena from those of the Orinoco; these mountains completely shelter the town from easterly winds, and supply it with water. Bogotà is slightly elevated above an extensive plain which lies to the west of it, and which measures about forty five miles from south to north, and nearly half as much in the other direction. This plain, which is surrounded by mountains which rise to a considerable height, is nearly 8640 feet above the sea. The soil is very rich, but by far the greatest portion of it is either overgrown with shrubs, or covered by marshes and swamps; only that part which immediately joins the town is partly cultivated and partly formed into *Potreros*, or places for grazing cattle. The river Bogotà, or Funza, from which the town has received its name, winds through the centre of the plain, at the distance of nine or ten miles from the town.

The climate of this plain is very temperate, the thermometer seldom rising above 60° or 65° in summer, and falling in winter only to 45° or 48°. As the town is only a few degrees from the equator, the mildness of the climate must be ascribed to its high elevation above the level of the sea, and in some degree also to the heavy rains. There are two rainy seasons, one during the months of April and May, and the other from the beginning of September to the end of December. During these months the rain is nearly continual. In June, July, and August the weather is unsettled and showery, and only from the beginning of January to the end of March it is rather dry. Plains which rise to a considerable elevation above the sea have generally a very dry climate, and rather suffer from want of rain; the difference observed in the plain of Bogotà is to be attributed to its comparatively small extent, and the great elevation of the mountain-ranges which surround it. But notwithstanding this excessive humidity the climate is not unwholesome. Epidemic diseases are unknown, and Europeans commonly enjoy good health, after having had on their arrival a fever for a few days.

Like many other towns built by the Spaniards in America, Bogotà presents the figure of a cross, of which the principal square and church form the centre. The streets are narrow, intersect one another at right angles, and are tolerably regular. All of them are paved, and the principal have footpaths, where the passengers are sheltered from the rain by the projecting roofs of the houses. A stream of water is constantly flowing through the middle of the streets. The principal street, *Calle Real*, is well paved, and built with the greatest regularity. At the extremity of it is the principal square, where on Friday a market is held. One side of the square is occupied by the palace, the other side by the custom-house, the cathedral, and its offices. The other squares also are spacious, and all of them are ornamented with fountains. At night the streets are imperfectly lighted by a few lamps placed at the corner of the streets.

The market-place is well supplied with every kind of provisions, especially fruits and vegetables, and those of Europe are mingled with others peculiar to America. At one place are seen hampers full of strawberries, apples, and peaches, and near them pine-apples and aquacates; at another, heaps of cabbages, carrots, and potatoes, by the side of yuccas and bananas; between sacks of maize, barley, and wheat, are piles of coconuts and loaf sugar. In one place are sold various

medicinal herbs gathered by the Indians in the mountains, and not far from them pinks, roses, and jessamine.

As Bogotà is subject to frequent earthquakes, most of the houses consist of one or two stories only; they are built of baked bricks; the greater part are covered with tiles, and the external walls are whitewashed. The Spaniards introduced the mode of building houses which they inherited from the Arabs of Northern Africa into all the large towns of America, and consequently the houses in these places more resemble those of Morocco and Algiers than those of England or France. The front wall presents only a few windows of different dimensions, without glass sashes, and defended by large iron or wooden bars. Two gates and an intervening passage lead to a spacious court-yard, which is surrounded by a projection of the roof and a gallery when the house consists only of a ground floor, but by a veranda if it is of two stories. Round this gallery is a long suite of rooms, which receive daylight only through the doors. The kitchen, which commonly occupies a corner of the court-yard, is spacious, less on account of the quantity of provisions cooked than the number of useless servants who assemble there. There are no chimneys, stoves only being in use. The furniture is simple. The use of carpets is general; the ancient straw mats of the Indians however are no longer used by fashionable people, and have been superseded by carpets of European manufacture. There is nothing in the drawing-rooms but two sofas covered with cotton, two small tables, a few leathern chairs, after the fashion of the sixteenth century, a looking-glass, and three lamps suspended from the ceiling. The bedsteads are somewhat ornamented, but feather-beds are never used: woollen mattresses are substituted for them.

The cathedral of Bogotà, which was a noble building, was ruined by an earthquake in 1827. It contained an image of the Virgin, which was covered with diamonds and other precious stones. The other churches, to the number of twenty-six, are in their interior resplendent with gold. A great number of churches are dependent upon convents, the revenues of which are very considerable. There are nine monasteries and three nunneries: those of the Dominicans and of the monks of San Juan de Dios are the most richly endowed; half of the houses in Bogotà belong to them. These monasteries are more remarkable for solidity than beauty of architecture, and are arranged nearly in the same manner as the private houses.

The palace, which once was the residence of the Spanish viceroys, and at present is inhabited by the president of the republic, is a flat-roofed house; two adjoining ones, much lower, ornamented with galleries, constitute its dependencies. The palace of the deputies is nothing but a large house at the corner of a street; the ground-floor is let for shops. The senate assembles in a wing of the convent of the Dominicans, which has been fitted up for the purpose.

There are three colleges in Bogotà, all well situated and well built. The principal one, that of the Jesuits, possesses the character of solidity peculiar to all the edifices erected by that famous order. The majority of the professors are monks or priests. The course of instruction in these establishments consists of the Latin language, philosophy, the mathematics, and theology.

An hospital is dependent on the convent of San Juan de Dios, but it is far from being well managed. The other public buildings in Bogotà are the Mint and a theatre.

The majority of the inhabitants are Creoles. The half-bred Indians however are numerous, being alone employed as servants. Mulattoes are not frequent, and negroes very rare. The whole number of inhabitants is estimated at 30,000 or 40,000. The inhabitants of Bogotà are mild, polite, and cheerful.

The alameda, or public walk, which forms one of the principal entrances of the town, is a fine piece of ground, intersected by fragrant hedges of rose-bushes and a variety of wild flowers of luxuriant growth. It is the usual promenade on Sundays and festivals for all classes of society. The other amusements consist of balls, cock and bull fights, and occasionally the theatre; but more frequently games of chance are resorted to, at which bets run as high as 10,000 piastres. The pomp displayed in the religious processions, and the great number of saints' days, greatly contribute to the amusement of the lower classes.

Bogotà owes its importance solely to the circumstance of its having been so long the seat of government, for which it is well adapted, owing to the ready communication with the

country to the north and east. In three days the town of Honda on the banks of the Rio de Magdalena is reached, from whence the post generally arrives at the coast in seven days, owing to the great velocity of the current, which however delays its return after the rainy season, sometimes fifty or sixty days. To remedy this inconvenience the establishment of a steam-vessel has been projected. Again, the river Meta runs to the east of the mountains which stand at the back of the town. This stream falls into the Orinoco, and thus gives facilities for sending information down that river. (Humboldt; Mollien's *Letters from Columbia*.)

BOGWANGOLA (BHAGAVAN GOLA), a considerable town in the district of Boglipore, on the right bank of the Ganges, in 24° 21' N. lat., and 88° 29' E. long.: about eight miles N.E. from Moorshedabad. It is a place of considerable trade, and forms an important grain market, from which the inhabitants of the town of Boglipore are principally supplied. To Europeans Bogwangola would hardly present the appearance of a town, the dwellings being built entirely of bamboos and mats. This unsubstantial mode of building has been used, because, owing to the encroachments of the Ganges, it has been more than once necessary to change the site. The water of the Ganges is here of sufficient depth to admit of trade being carried on at all times.

BOHEMIA (in German, Böhmen), also termed Böhme in many ancient records, derives its name from the Boii, who once occupied the parts about the sources of the Elbe and Moldau. It now constitutes a kingdom forming part of the empire of Austria, and comprising Bohemia Proper, the margraviate of Moravia, and that small portion of the duchy of Upper Silesia, which was not ceded to Prussia under the treaty of Hubertsburg in 1763. The margraviates of Upper and Lower Lusatia also formed part of the Bohemian dominions, until the treaty of Prague in 1635 transferred them to the electorate of Saxony. The details which we are about to give will be confined to the territory generally known by the designation of Bohemia; which is an irregular quadrangle in the S.E. of Germany, extending between 48° 33' and 51° 5' N. lat., and 12° and 16° 46' E. long.; it contains a superficies of about 20,010 square miles, or 12,806,400 acres, which is more than two-thirds of the area of Ireland or Bavaria. It is bounded on the north-west by the kingdom of Saxony, on the north-east by the Prussian province of Saxony, and by Austrian and Prussian Silesia, on the south-east by Moravia, on the south by the Archduchy of Austria, and on the south-west by the kingdom of Bavaria. The whole circuit of Bohemia is estimated at about 810 miles, of which 165 lie next to Prussia, 294 to Saxony, and 175 to Bavaria: so that 176 miles only of this circuit are skirted by other parts of the Austrian dominions. Inclusive of the metropolitan district of Prague, Bohemia is divided into seventeen provinces or circles, which are subdivided into 1332 judiciary circles:

Province.	Sq. Miles.	Towns.	Villages.	Population.	Chief Towns.	Population.
Rakonitz . . .	966	18	508	168,899	Schlan . . .	3600
Beraun . . .	1118	34	769	172,389	Beraun . . .	2200
Kaurrim . . .	1113	42	681	190,631	Kaurrim . . .	1900
Bunslau . . .	1617	46	1034	295,552	Jung-Bunslau	4950
Bilschew . . .	994	28	612	250,738	Gutshin . . .	3800
Königsgratz . .	1360	40	811	325,102	Königsgratz . .	7500
Chrudim . . .	1239	34	762	300,096	Chrudim . . .	5650
Czaslau . . .	1238	44	840	238,690	Czaslau . . .	3350
Tabor . . .	1155	35	716	195,979	Tabor . . .	4100
Budweis . . .	1617	37	897	204,502	Böhmissh-Budweis . . .	7500
Praehin . . .	1865	57	985	259,110	Pisek . . .	5500
Klattau . . .	966	26	640	171,132	Klattau . . .	5700
Pilsen . . .	1428	29	663	195,583	Pilsen . . .	8900
Eibogen . . .	1176	40	615	220,103	Eibogen . . .	2070
Saatz . . .	903	29	464	135,655	Saatz . . .	4950
Leitmeritz . . .	1428	43	954	250,112	Leitmeritz . . .	4300
Prague . . .	3	1	120,000	120,000	Prague . . .	120,000
	20,010	583	11,961	3,902,875		193,820

Bohemia is inclosed on every side by lofty and in parts wild and dreary mountains. On the west side, and from a point close upon the Fichtelgebirge, issue two ranges, the one taking a N.E., and the other a S.E. direction. The first of these ranges, which separates Bohemia from Saxony, and may be termed 'the left arm of the Sudetsh chain,' is known under the name of the Erzgebirge (Ore-mountains). It runs to the left bank of the Elbe between Tetschen and Schandau, and is neither precipitous nor of a wild character, but with few exceptions wooded nearly to its summit. Its ridges form an undulating line, here and there broken

by gentle depressions. The short slope is towards Bohemia, and the longer one towards Saxony. The highest points of this range are the Schwarzwald or Sonnenwübel, near Joachimsthal, 4125 feet (or according to Hallaschka, 4005 only); the Lesser Fichtelberg, near Wiesenthal, 3999, or according to some 3709 only; the Kupferberg 2749, towards the southern end of the range; and the Schneeberg, near Tetschen on the Elbe, 2291, at the northern end of the range. The western and south-western borders of Bohemia are defined by the Böhmerwald-gebirge (Bohemian Forest Mountains). The Sudetsh chain, of which the principal range is more peculiarly designated the Sudeten-gebirge (Sudetsh mountains), extends from the right or eastern bank of the Elbe as far to the eastern side of Bohemia as Grulich. Certain portions of this range bear particular names; such as the north-western, called the Isergebirge (Mountains of the Iser), and that small portion lying next to the Elbe, which is called the Lausitzer Bergplatte (Mountain-plateau of Lusatia).

In the last-mentioned quarter the loftiest summit on the side of Bohemia is the Tafel-fichte, which lies at the extreme point of the Bohemian frontier next to Silesia and Saxony, and, according to Gersdorf, has an elevation of 3780 feet. Commencing from the eastern banks of the Iser, the frontier line between Bohemia and Silesia runs along the crest of the remaining and principal arm of the Sudetsh chain, termed the Riesengebirge (or Giant Mountains), a name frequently applied to designate that chain in general. Seen from a certain distance, this range describes a waving line, with a few elevated points, which present the appearance of having been cut short off at their upper extremities. The highest of these abrupt and naked summits is the Riesen or Schneekoppe (Giant or Snow-cap), upon which a circular chapel dedicated to St. Lawrence has been erected; its elevation according to some is 5400, but according to others, not more than 5206 feet. Next in height are the double-capped Brunn or Bornberg, and the Great Sturmhaube (Tempest-hood); the former of which is 5008, and the latter 4745 feet above the level of the sea. The Sudetsh chain, which runs S.S.E. to the vicinity of Grulich, is called the Glatz Mountains (Glatzischegebirge), the waving outline of whose occasionally cap-crowned ridge forms a pleasing object to the eye. Its highest point, though it belongs rather to Moravia than Bohemia, is the Grulich or Spiegeltz Schneeberg; but the most elevated on the Bohemian side are the Deschnay, Hohokoppe, or Grenzkoppe, as it is also termed, which rises to the height of 3748 feet above the sea, and the Marienberg near Grulich, to which some assign an elevation of 4545 feet. The highest ranges of the Sudetsh mountains consist of primitive formations, and are in some parts rich in ores: those of inferior height are composed of clay-slate and limestone, intermixed with beds of coal; and the offsets of lower elevation are formed in some parts of quartz and sandstone, and in others of grauwacké and basalt.

A lower range runs along the south-eastern boundary of Bohemia, termed the Bohemian-Moravian Mountains, and forms a connecting link with the Glatz Mountains towards the north, and with the Mannhart Mountains, in the archduchy of Austria, towards the south. This range, which is of moderate elevation and gentle ascent, separates the basin of the Elbe and Moldau from those of the Danube and the March.

The range which forms the boundary line between Bohemia and Bavaria and part of Austria, is known by the name of the 'Böhmerwaldgebirge' (Bohemian forest mountains), which is wholly of primitive formation, and characterised by naked and precipitous features and deep ravines. Towards Bavaria its slope is extremely abrupt, but on the Bohemian side the descent is gradual; and on this side the loftiest heights are the Heidelberg, whose summit forms a spacious plateau, at an elevation of 4622 feet, the Kubani or Boubin, 4496 feet high, the Rachel (which some however place in the Bavarian territory), 4394 feet, and the Dreissesselberg (mount of three seats), 4054 feet.

Bohemia is also intersected by several ranges of inferior elevation; the northern, called the Northern Ball, or Trapp Mountains, spreads in various directions; and the more southerly, called the Midland Mountains, which are arms of the Bohemian Forest chain, consist of the Beraun, Moldau, Euler, &c., ranges.

The interior of Bohemia presents an undulating surface, very frequently studded with high and pointed eminences,

but with a general slope towards the centre of the country. The most extensive plains are in the provinces of Königgratz and Chrudim, from Neustadt to the Nassaberg acclivities. The country is full of valleys and mountain passes, among which we may mention the delightful valleys of the Elbe and Beraun; but the deepest is the Riesengrund or Giant's Glen among the Giant Mountains. From Zippe's Survey it would appear that the whole of the mountains which inclose Bohemia are of primitive formation, with the exception of two points, the one in the north where the Elbe quits Bohemia, and the other in the north-west, about Braunau and Trautenau, which are of a later formation. A very extensive formation of sandstone is observed in the heart of the country; and there is one most remarkable mass, the Steinwald, near Adersbach, which is nearly five miles in length and above a mile in breadth. It stands at some points in compact masses, and in others is shaped into lofty columns, pyramids, cones, &c., forming immense labyrinths. In many parts, again, there are hills and mountains composed of one solid mass of basalt. Although some consider the Kammerbühl, near Eger, and the Wolfsberg, in the province of Pilsen, to be extinct volcanoes, there is no positive evidence that any part of Bohemia has ever been the scene of volcanic eruption.

The whole of Bohemia being at a considerable elevation, its rivers rise either within or close upon its borders. The Elbe (the antient Albia, or the Labe of the Bohemians) traverses the N.E. part of the country. It originates in the junction of two brooks, the White-water and Elbe-brook, whose sources lie ten miles apart in the Giant Mountains; it descends as an impetuous torrent into the hill-country, receives a multitude of minor streams in its course, and assumes a blood-red tint after heavy showers, which is particularly remarkable in the neighbourhood of Josephstadt and Königgratz. It forms in many parts a rich alluvium by the overflowing of its banks, and quits Bohemia after a course of about 190 miles at Herrenskretschen, near Schandau, where it enters the kingdom of Saxony. Its sources are 4260 feet above the level of the sea, while its bed, at the point where it leaves the Bohemian territory, is not more than about 287 feet above it. Its principal tributaries within the borders of Bohemia are the Moldau and Eger. The Moldau rises from the Black Mountain (Schwarzberg) in the Bohemian Forest Mountains, close upon the confines of the Bavarian bailiwick of Wolfstein: it first flows S.E., and when it has reached Rosenberg at the southernmost extremity of the kingdom, takes a northerly direction through the heart of the country, and falls into the Elbe near Melnik after a short bend to the east. The Moldau, termed the Witwa by the natives, runs for about 280 miles before its junction with the Elbe: it generally runs between steep rocks, and at its confluence with the Elbe is nearly as broad as that river. From Budweis, where it becomes navigable, to Prague, its length is about 130 miles, and from Prague to Melnik about eighteen. Its breadth at Prague varies from 250 to 286 paces; and the height of its surface, which is 1511 feet at Krummau, declines at the bridge in Prague to about 529. The Eger, called the Cheb by the Bohemians, rises on the east side of the Fichtelberg in the Bavarian circle of the Upper Main, whence it soon after enters Bohemia and flows eastwards for about eighty miles until it joins the Elbe on the west bank near Theresienstadt. The minor tributaries of the Elbe are the Aupa, the Erlitz or Adler, which rises near Königgratz and skirts the principality of Glatz in Prussian Silesia for a short distance, the Mettau, which flows from the vicinity of Josephstadt, and the Iser, which descends from the S. slope of the Giant Mountains, not far from Brandeis. The streams that join the Moldau are the Luschnitz, which flows from the neighbourhood of Moldautein, the Wottowa or Watawa, which flows from the Bohemian Forest Mountains, and for some distance first bears the name of the Widra, the Sazawa or Czazawa, whose source lies near Hradishka, and the Beraun or Beraunka, which rises near Königsaal. The whole drainage of Bohemia finds an outlet through the narrow pass of the Elbe at Herrenskretschen. As this outlet, independently of its confined width, bears evident marks of violent disruption, and as every other side of Bohemia is walled in with mountains, it has been conjectured that the whole of Bohemia must at one time have formed an immense lake, which has been drained by a disruption taking place at the point where the Elbe ceases to be a Bohemian stream. Among the numerous falls of water in Bohemia

the most interesting are those of the Elbe, of the Moldau across the Devil's Wall, and those in the vicinity of Neuwald.

Though full of small pieces of water, Bohemia has no lakes. There are several large swamps and morasses, particularly the Servina swamp (or Gezera), between Brür and Postelberg, and the Slatina swamp near Do. an on the Eger: a considerable portion of the first of these has however been drained and converted into pasture land. The country is extremely rich in mineral waters, and several of them are in great repute. A recent enumeration of such as are publicly known amounts to upwards of 160: at the head of the ferruginous springs are the Franzens brunnen, near Eger, the three springs at Marienbad, and that at Giesahübl; among the alkaline springs are those of Carlsbad and Teplitz, one at Marienbad, and others at Bilin, Liebowrda, &c.; there are bitter waters at Sedlitz, Saidschitz, and Püllna; sulphurous springs at Teplitz, Soberschan, &c.; aluminous and vitriolic springs at Stecknitz, Mocheno, Zlonitz, &c.; carbonic acid waters at Carlstadt; and saline springs at Schlan and in other places. The virtues of the springs of Carlsbad, as well as the beauty of the adjacent scenery, have placed that spot at the head of the baths of Germany, and acquired for it the designation of 'the Pearl of Bohemia': they yield 1500 aulms (22,500 gallons) per hour, of which the Springer alone yields 2475 gallons. The temperature of some of them at the moment of their first emission is not less than from 59° to 60° of Reaumur (about 165° of Fahrenheit); that of the springs of Teplitz is 30° (98° Fahr.); the Franzens brunnen near Eger not more than 9° or 10° (54° Fahr.). The whole quantity of mineral water exported from the Bohemian springs in the year 1825 was 223,320 quarts.

The elevation of the interior of Bohemia and its remoteness from any coast, for it is nearly equidistant from the Baltic and Mediterranean, give it a clear and salubrious atmosphere and general constancy of weather. The climate naturally becomes keener and bleaker as the chains of mountains which encircle Bohemia rise in height. The regions about Gottesgab (God's gift) in the Ore Mountains are considered the coldest in Bohemia, and there are few months of the year in which there is not need of fire; nor will grain ripen in them. In the Bohemian Forest range, where the snow frequently lies twelve feet deep, and does not disappear until the middle of April, as well as in those parts of the province of Budweis which are saturated with moisture, there are many districts, in general covered with woods or forests, which are not habitable. From observation it appears that the mean temperature at Prague is 7,45° Reaumur (47,45° Fahr.) whilst on the elevated site of Reichenberg it is not more than 4,175° (41,175° Fahr.). In the neighbourhood of Reichenberg, where the harvest is two or three weeks later than in the low country, the highest degree of heat has been found to be 12° Reaumur (59° Fahr.), and the severest degree of cold -6° (18,5° Fahr.). The prevalent winds blow from west to some points north, and from west to some points south. The winds from these quarters, according to Diask's observations, invariably bring dry weather with them in winter, but wet in summer; the more southerly their point of departure in summer, the finer the weather. In winter it is precisely the reverse, they being usually accompanied by rains and thaws. On the other hand, the nearer to the north their point of departure, the more frequent and the more violent are the storms by which they are attended.

The soil of Bohemia varies considerably in productiveness, but it is nowhere entirely sterile except in certain parts of the Bohemian Forest, on the Ore, and Giant Mountains, those lands along the banks of the Elbe, particularly from Kunieritzerberge to Königgratz, which are coated with drift sand, and in some of the districts where swamps abound. The rest of the low country is in general rich and productive, particularly the province of Saatz. No soil in Bohemia is however more fertile than that which has been formerly the site of large sheets of water, its deep black loam being highly favourable to the growth of wheat, rye, and barley. Bohemia produces almost every description of grain and pod seeds, but not much maize: the quantity of arable land is said to be about 5,346,300 acres (3,805,430 yochs), and the yearly crops of wheat are estimated at 6,086,000 Imperial bushels; of rye, at 25,430,000; of barley, at 11,020,000; and of oats, at 22,035,000: among other productions are nuts, potatoes, vegetables, liquorice-root, chickory, excellent hops, &c. Flax is grown in every province, but of various

quality, and hemp is raised in some few quarters; rapeseed is also largely cultivated for the sake of the oil. Fruit abounds in all parts except the more elevated districts; wine is obtained in none, excepting the vicinities of the Elbe and Moldau, which yield annually about 392,000 gallons. The border mountain ranges, from which however some of those which adjoin Moravia must be excluded, contain rich supplies of timber and fuel, though their wasteful consumption renders those supplies no longer so abundant as in former times. Mosses, particularly the Iceland sort, herbs, grasses, and medicinal plants, many of them of rare occurrence elsewhere, are plentiful in the mountain regions.

Bohemia contains large masses of quartz, granite, and sandstone; precious stones, particularly the celebrated Bohemian garnet or pyrope, rubies, sapphires, topazes, chrysolites, amethysts, cornelians, chalcedonies, and agates; limestone, beautiful marbles, porcelain earth, slates, potter's clay, between twenty and thirty species of serpentine, basalt, porphyry, &c. The mountain districts yield gold and silver, quicksilver, tin, lead, iron, bismuth, zinc, cobalt, arsenic, manganese, nickel, chrome, &c. Of salts Bohemia furnishes native alum, natron, several kinds of vitriol, and almost every variety of officinal salts from its mineral springs; and as common salt is extracted from some of the springs, it has been inferred that beds of rock-salt exist in some quarters. Considerable strata of sulphurous slate, as well as coals, have been found, and in some directions peat-turf is dug: black-lead of good quality likewise frequently occurs.

Bohemia has a very superior breed of horses. This breed, though not of large size, has undoubtedly the advantage over that of any immediately adjacent country from its loftier stature and finer limbs: the number is upwards of 140,000. The supply of horned cattle, amounting to about 244,000 oxen and 651,000 cows, is not adequate to the home demand. The native race is in general small and of inferior shape; and, on account of the insufficient supply, large importations are made from Poland and Moldavia. The sheep, of which there are about 1,500,000 heads, afford excellent wool. The stock of goats and swine is abundant. Poultry, particularly turkeys and geese, are reared everywhere; honey and wax are produced in all the provinces. The stock of game has fallen off in those quarters where the population has increased, but no where in so marked a manner as in the 'Giant-mountains'; it cannot however be termed scanty; and Bohemia still possesses stags, deer, hares, wild hogs, pheasants, and partridges in abundance. Some of the wild animals, such as bears, wolves, and lynxes, continue partially to infest certain districts, chiefly those adjoining the 'Bohemian-forest mountains.' The fox, marten, pole-cat, weazle, and squirrel also inhabit the Bohemian woods. Birds of prey abound. Considerable supplies of fish are obtained not only from the rivers and brooks, but from the extensive ponds in various parts of this country; amongst them is the salmon, which finds its way from the North Sea into the Moldau and Wottowa. The mountain-streams are full of trout; and eels and craw-fish are found in many rivulets. The Moldau contains a mussel, from which pearls are extracted, which are also obtained in the Wottowa and White Elster, near Steingrün, in the district of Eger.

We have already given a statement of the present population of Bohemia, which amounts to 3,902,875 souls. To this amount about 30,000 military and persons connected with the military establishment must be added; so that the actual number of inhabitants is about 3,932,000, or about 196 to every square mile. There has been a progressive increase, as will be seen from the subsequent data. In 1785 they amounted to 2,716,084; in 1795, to 2,879,793; in 1805, to 3,263,879; in 1815, to 3,142,450; in 1825, to 3,529,192; and in 1831, to 3,889,828, of whom 1,848,530 were males, and 2,040,298 were females. In the sixteen years between 1815 and 1831, therefore, the increase was 746,378, or 46,648 per annum: in the six years between 1825 and 1831 it was 359,636, or 59,939 per annum; and in the two years 1832 and 1833 it was 74,047, or 37,023 per annum, a diminution which is ascribed to the destructive epidemic that prevailed during that period, particularly in the year 1832. Of the present population about one-third live in towns, and the remainder form the rural population. The total number of houses in 1834 was 555,448, which gives an average of rather more than seven individuals to each house. Bohemia, with the exception of the capital, contains no town of the second or third rank; none

of which the population is between 50,000 and 100,000 or between 15,000 and 50,000; and it has but twelve even of the fourth rank, namely between 5000 and 15,000. The number of ecclesiastics is 4107, or about 1 to every 950 souls, and of persons of noble blood, 2134, or about 1 to every 1829. We may here remark, that the population is comparatively greatest in those parts where the soil is by no means the most productive; we allude to the mountainous districts of the north and east of Bohemia. The least populous part is the province of Prachin.

Nearly two-thirds of the inhabitants of Bohemia, particularly those in the central and eastern provinces, are of Slavonian blood, and call themselves Czeches or Tscheches; they differ from every other class of Slavonians in the Austrian dominions, according to Professor Schnabel, from the superior antiquity of their literature, and the greater suppleness and refinement of their dialect, both as it exists at present, and as it existed in past ages. In common with the Slowaks and their brethren in Moravia, they are descendants of the Lechi or north-western branch of the Slavonians, who were the first to cultivate and refine their native language. The Czeches are passionately fond of music and singing, and generally remarkable for intelligence and strength of memory. Next to this race, the Germans, who are about 900,000, are the most numerous; they chiefly inhabit the districts bordering upon Prussia, Bavaria, and Saxony, and spread themselves from the province of Pilsen, through those of Ellbogen, Saatz, Leitmeritz, and Bidschow or Biczow, as far as that of Königgratz. In mechanical and mercantile pursuits they are superior to the Slavonian inhabitants; and their language has become that of the educated classes throughout the country. The Jews, said to be at present 62,000 or more (in 1797 they did not exceed 3600 families), appear from the inscriptions on several ancient tomb-stones to have been settled in Bohemia as far back as the first century; their principal occupation is trading and money transactions: most of the brandy distilleries and many breweries are in their hands, and they generally rent the government potash works. At Prague there is a colony of Italians who settled there in early times, and are exclusively employed in trading. The climate of Bohemia being, on the whole, a healthy one, there is less mortality among the inhabitants than in many other countries, and longevity is of frequent occurrence. The average proportion of the deaths to the whole population is 3 in every hundred souls, which includes the mortality of the capital: in the low country it does not exceed 1 in 39.

The Roman Catholic religion is professed by the majority of the inhabitants. The secular clergy consist of the metropolitan archbishop of Prague, the three bishops of Leitmeritz, Königgratz, and Budweis, a titular bishop, and twelve prelates; and the affairs of the Bohemian church are conducted by the metropolitan and the three above-mentioned bishops. There are chapters and collegiate bodies composed of provosts, deans, and members of chapters; and an episcopal consistory is attached to every chapter. The remainder of the establishment comprehends 7 provostries, 11 archdeaconries, 133 deaneries, 1197 benefices or cures of souls, 83 parochial administrations (*pfarr-administrationen*), 340 ministries (*location*), and 82 preacher-ships (*exposituren*). Considerable limitations have been imposed on the regular clergy, who still possess 75 monasteries and 6 convents, including an English sisterhood. The Protestants are most numerous in the north-eastern parts of Bohemia; but there are none in the south-western: they are composed of 10 congregations of the Augsburg rule of faith, in number about 13,000 souls, and of 35 congregations of the Calvinistic persuasion, in number about 45,000. Besides these, there are about 7000 Mennonites, Hussites, and followers of a sect closely resembling the Quakers. There was a time, indeed, when sects maintaining the most absurd opinions started up in Bohemia; but we shall only instance the credulous adherents of Grill, the enthusiast of Czernikov, a place about five miles from Königgratz, who metamorphosed Josephstadt into the valley of Josaphat, and Königgratz into the city of Jericho. Others of his cast had long before him affirmed that Bohemia was nothing less than Judæa itself, the land of Sion and Bethlehem, Tabor and Emmaus, Horeb and Jerusalem; and in one corner of Bohemia a remnant of Adamites subsists even at the present day.

The houses of the Bohemians possess in general few

claims to elegance of structure, or even comfort in their arrangement; and there is scarcely a town which is not ill built and badly laid out. Places of any magnitude are usually constructed of stone, but here and there of slate; in the agricultural and mountainous districts, the houses are rarely built with any other material than wood. The whole number of families in the year 1830 was 876,633.

The Bohemians may be described as being, with few exceptions, a peaceably inclined and religiously disposed race of men, devotedly attached to the government under which they live, and brave and resolute under the endurance of hardships: they are remarkable for hospitality and kindness towards the needy and afflicted. The moral condition of the people too is good, as may be inferred from the average of offences which were the subject of investigation or trial during the five years' interval between 1824 and 1828; this average amounted to 2579 cases per annum, which did not exceed 1 in every 1428 individuals. The number of illegitimate births amounted in 1829 to 16,509, of which 8442 were males and 8067 females; every eighth birth coming under this description. The annual average number of births for the period of thirty years between 1785 and 1814 was 126,279; and for the fourteen subsequent years (1815 to 1828) it was 143,087. The average of deaths for the first-mentioned period was 100,399; and for the last-mentioned, 100,289. With respect to marriages, the annual average between 1785 and 1814 was 24,089; and between 1815 and 1828, 27,387.

The cultivation of the soil is susceptible of great improvement. The great mass of the peasantry are held in servitude, and have little interest in the produce of their labour. The landed property of Bohemia is, in fact, almost universally in the hands of the nobility and a few free peasants, who are proprietors of the actual labourers on their estates, and exact heavy service from them. Owing to the inadequate supply of fodder for horses and cattle, there is an insufficient supply of manure. The whole extent of available soil is estimated at about 11,106,090 acres (7,774,264 Vienna yochs); the remainder consists of rock, marshes, tracts of sand, roads, and paths. In some parts the produce of the land is tolerably abundant; for instance, in the province of Saatz and the vicinity of Prague, wheat and rye bear seven or eight fold, barley ninefold, and oats tenfold. Potatoes are universally cultivated, particularly in the mountainous parts of Bohemia. There are about 1,140,000 acres (796,721 yochs) of meadow land in Bohemia, and the yearly quantity of hay which they produce is estimated at 1,200,000 tons; nor does the supply, including crops from fallow land, average more than 1,500,000. The growth of clover has so much increased, that in some years the quantity of seed exported has amounted to 16,200 cwt. The cultivation of fruit is pursued to the greatest extent in all the northern provinces, with the exception of the districts about Eger, where the people appear to entertain an extraordinary aversion to it; its extension and improvement have been essentially promoted by the encouragement given by the 'Patriotic-Economical' and 'Pomologic' societies in Prague. The finest orchards, or rather groves of fruit-trees, exist in the vicinity of Neustadt above the Mettau; whole woods of plum-trees are met with near Melchowitz, Weltrus, and other spots. Bohemia is, in fact, a large exporting country for apples, quinces, dried plums, pears, cherries, &c.; and the extent of garden-ground under cultivation is estimated at 121,560 acres (85,014 yochs). The production of flax, although it is grown in every province, is by no means sufficient for the internal consumption; and this remark applies equally to hemp: the importation of these articles, which are chiefly derived from Saxony and Silesia, is said to amount to about 300 tons annually. Among dyeing plants the chief is madder-roots, which are raised in large quantities about Solnitz and Liboch. Bohemia is celebrated for an excellent kind of hops, of which the produce is considerable; those grown in the province of Saatz, and next to these, the hops cultivated in the provinces of Rakonitz, Bunzlau, and Pilsen, are in highest esteem. The quantity exported appears to vary between 10,000 and 11,000 cwt. The vine, there is reason to believe, was much more extensively cultivated in former times than at present; but the climate is undoubtedly unfavourable, and hence the surface devoted to its cultivation is not more than 6400 acres (4481 yochs), of which, as before observed, the produce in wine does not much exceed 392,000 gallons. The Burgundy grape was transplanted to the neighbourhood of Melrick about the year 1346, and the wine

derived from it in favourable seasons is accounted little inferior to the parent-juice. An ordinary kind of sparkling champagne, called 'Csernoseker,' is made near Ausig; but the other descriptions of wine produced near Prague, Bechlin, Raudnitz, &c., are but of indifferent quality. The woods and forests of Bohemia occupy about 3,314,000 acres (2,319,811 yochs), and their yearly produce is estimated at 1,932,000 quadr-klafters, or square fathoms, of soft wood, and 237,000 of hard.

Few branches of industry are more valuable to Bohemia than the working of its mines; and although the produce of the precious metals has declined, the whole annual supply of these mines, which is estimated at 215,000*l.*, has not fallen off in value. The quantity of gold and silver, now principally got near Przbiram, Joachimsthal, Eule, and Balbin, is but small compared with what was obtained in the sixteenth century, when the mines yielded as much as 1,090,900 marks, or about 9,917,300 ounces of silver, up to the year 1689 alone. Between the years 1755 and 1817, however, the produce of this metal sent into the public mint was not altogether more than 255,783 marks, or about 2,298,000 ounces; and in 1827 the annual produce had sunk to 1202 marks. Quicksilver has hitherto been found only in the form of cinnabar; the copper mines have ceased to be productive, and are abandoned; those of tin (and it may be here observed that Bohemia is the only part of the Austrian dominions where it is found) have so much declined, that between the years 1817 and 1828 their annual produce fell from 18-4 cwt. to 679 cwt., and the working of them has been abandoned by the government to private individuals. The lead mines, principally situated about Przbiram, Mies, and Bleistadt, continue to yield abundantly: their produce in 1825 consisted of 14,168 cwt. of lead containing silver, 18,022 cwt. of pure lead, and 10,904½ cwt. of litharge; making in all 43,094½ cwt. Lastly, the iron mines, the richest of which lie in the districts of Harzowitz and Ginetz in the province of Beraun, and in that of Pilsen, employ about eighty furnaces and 6000 hands; and have increased since the year 1825 from an annual produce of about 7500 tons to about 17,500; but the article is inferior to the Styrian and Carinthian iron. Quarries are worked in every part of Bohemia; and there is scarcely a province in which lime is not prepared. Marble is obtained at Steinmetz; sandstone in several places; the Przilpe, Breitenstein, and other quarries, yield excellent mill-stones; large quantities of basalt are worked into form for building and paving at Pahren, Rodau, &c.; quartz of superior quality is got at Böhmisch-Aicha, Weisswasser, Giesshügel, and elsewhere. Among the precious stones found in Bohemia, the celebrated garnet, which is equal to that of the East in brilliancy, as well as colour and hardness, is principally found at Swietlau in the province of Czaaslau, and Dlaschkowitz in the province of Leitmeritz. The produce of the coal-mines has greatly increased of late years in consequence of the increasing price of wood, particularly in the northern provinces: between the years 1819 and 1828 alone the annual supply rose from 45,000 to nearly 80,000 tons. The southern parts of the province of Rakonitz, in particular, furnish a coal of very superior description. Graphite or black-lead is found in considerable layers near Krummhou and Swojanow, and is extensively worked; but is far inferior to the English. About 4000 cwt. of sulphur are annually obtained, and vitriol and sulphuric acid are prepared from the residua.

Bohemia is one of the most manufacturing countries in the Austrian territory; and the northern provinces, especially the parts adjacent to Reichenberg, Rumburg, and Trautenau, where the rawness of the climate, or an indifferent soil is unfavourable to agriculture, are the principal seats of manufacturing industry. The glass of Bohemia has been in repute for its cheapness, lightness, and durability ever since the thirteenth century; although its product has sensibly declined in modern times, it still employs nearly sixty works, and about 4000 hands, and keeps a capital of 800,000*l.* and upwards profitably engaged. The best manufactories of this article are at Neuwald and Grätzen; and the vicinity of Haida is also celebrated for its polished and cut glass. The best mirrors and enamelled wares are produced at Neuburkenthal and Bürgstein. The cultivation and working up of flax constitutes a chief means of subsistence among the inhabitants of the highland districts. Many parts of the districts adjoining the northern and eastern ranges of mountains form one continued manu-

factory of linens, in which thousands of humble cabins perpetually resound with the noise of the jenny or loom; 500,000 hands at least (a considerable proportion at their leisure hours only) are employed in the manufacture of yarn, and as many as 55,000 weavers in that of linen; 1100 individuals depend on the making of tapes and ribbons, and full 20,000 on lace-making. The yearly value of the several products which their united industry supplies is estimated at 1,200,000*l.* sterling. But this branch of manufacture is on the decline, in consequence of the progress making in that of cottons. With regard to the last, much twist of the inferior numbers is spun by machinery at and near Neumarkersdorf, Wernstadt, Rothenhaus, Joachimsthal, and Schönlinde, &c., but the higher numbers are imported from England and the archduchy of Austria. The weaving of plain calicoes, of which the annual value is estimated at 300,000*l.*, is principally carried on in the provinces of Leitmeritz, Bunzlau, Ellbogen, and Biczow; the finer descriptions, to the extent of about 250,000*l.* a year, are manufactured in the same quarters, as well as at Prague; and cotton-printing, which has greatly advanced of late years, is best done at Cosmanos, Reichstadt, Jung-Bunzlau, and Prague. The number of pieces made throughout Bohemia is said to be upwards of 100,000, over and above what is produced by machinery. Its cotton manufactures of all kinds employ about 20,000 hand-spinners, and between 9000 and 10,000 weavers; these however are independent of about 18,000 individuals who are employed in making hosiery, the yearly value of which is estimated at 150,000*l.* The bleaching-grounds are numerous, and many of them, particularly that at Ländakron in the province of Chrudim, are on an extensive scale; the quantity of cottons bleached by all these establishments is computed to amount to 40,000,000 pieces of twist, 200,000 shocks of linens, and 100,000 pieces of cotton, and the expense of bleaching is about 160,000*l.* per annum. The potash manufactories employ about 6000 hands, and the annual value of the article produced is about 200,000*l.* Large quantities of worsted stuffs and woollens of an inferior quality are made; woollen-cloths and kerseymeres alone employ above 8000 hands, and are manufactured to the extent of about 500,000*l.* or 600,000*l.* yearly value, and 60,000 owt. of the raw material; of these nearly one-half are made in the province of Bunzlau, in which lies Reichenberg, the great seat of manufacture for the middling descriptions of Bohemian woollens. It has been estimated that the trade in wool and woollen manufactures affords subsistence to 70,000 individuals and upwards; namely, about 55,000 spinners, 11,000 to 12,000 weavers of piece-goods, 3000 to 4000 weavers of worsted stuffs, and 2000 to 3000 stocking-makers. Of silks the manufacture has hitherto been inconsiderable, and it is almost wholly confined to Prague. Leather and manufactures from it give employment to about 4000 hands, and the value of the articles produced may be estimated at between 300,000*l.* and 400,000*l.* a year. The manufacture of china has been brought to much perfection at Schlaggenwald, Ellbogen, Pirkenhammer, and in other places; and that of earthenware is carried on in several parts of the country. Iron ware is made to the extent of about 170,000*l.* per annum; steel, cutlery, and needles are manufactured principally, and of the best quality at Prague, Nixdorf, and Carlsbad. Bohemia also possesses copper and tin manufactories, but so little brass is made that it depends for its supply on the archduchy of Austria. The number of paper-mills exceeds 100, and the yearly value of their various products is estimated at about 150,000*l.* One-third at least of the population of Bohemia depend upon manufactures for the chief means of subsistence. Schnabel calculates the clear profit derived from manufactures of all kinds at nearly 2,000,000*l.* sterling a year.

Bohemia, which possesses peculiar facilities for internal and external intercourse by means of the natural lines of communication of the Elbe and Moldau, carries on an active trade with the other parts of Austria, and with foreign countries. Its exports amount to about 1,500,000*l.*, which amount is composed, so far as respects indigenous articles, of about 400,000*l.* in value of mineral products (principally glass), 500,000*l.* of vegetable productions, and 560,000*l.* animal products, particularly wool and quilts; on the other hand, the imports are computed at about 1,400,000*l.* per annum. Prague is the centre of the chief commercial and money transactions, for which its situation peculiarly fits it. The country possesses roads, in general kept in excellent order, to the extent of nearly 1700 miles;

and it has two lines of iron railways, the first constructed in Austria on a large scale; the one running between Budweis and Linz, and the other, which is ninety miles in length, between Pilsen and Prague. Much benefit has accrued to the country from the establishment of a periodical exhibition of native productions and manufactures, as well as the recent foundation of a society at Prague for the promotion of national industry.

The intellectual wants of the people do not, on the whole, appear to have been neglected. The national schools consist of a normal seminary for educating teachers, 40 head schools, and 2556 common schools, of which 2500 are Roman Catholic, 36 Protestant, and 20 Jewish. For the higher branches of education Bohemia possesses a university at Prague, 26 gymnasia or public schools, three philosophical, and three theological seminaries, a polytechnic institution, an academy of painting, a conservatory of music, several military schools, and other establishments. In Prague there is an academy of the arts and sciences, the only institution of the kind in the hereditary dominions of the house of Austria, and an economic-patriotic society, which has done much for the encouragement and improvement of agriculture.

The civil administration of the country is vested in a central government, subordinate to the higher authorities in Vienna; its seat is Prague, and its president is styled the superior burgrave. Judicial affairs fall under the superior cognizance and controul of a court of appeal and bench of criminal justice in the same capital.

(Blumenbach's *Bohemia*; *Austrian National Encyclopaedia*; Hassel's *Austrian Empire*; Lichtenstern, Neumann, Schnabel, Malchus, v. Biecke, &c.)

BOHEMIA, FOREST OF, called in German *Böhmer-Wald*, and by the aborigines of Bohemia or Czechea, *Szumava*, is a mountain-range of considerable extent. It separates in the greatest part of its course Bohemia from Bavaria. Its direction is nearly N.W. and S.E.

It commences at its north-western extremity near the place where the fiftieth parallel is cut by the meridian of 12° 20', to the south of the town of Eger: the depression by which it is divided from the neighbouring Fichtelgebirge is upwards of 1500 feet above the level of the sea. In this depression rise two torrents, the Wondra, which running north-east falls into the Eger and the Wald-naab, which flowing south-west empties itself into the Naab. The range terminates at its south-eastern extremity with the hills which advance close to the banks of the Danube opposite the town of Linz in Upper Austria, where the surface of the Danube is still about 840 feet above the sea.

This mountain-ridge is very distinctly marked on its south-western declivity, where it descends very abruptly towards the table-land of Southern Germany, which is at a mean upwards of 1000 feet above the sea; towards its southern extremity, from the source of the Mühlbach to Linz, it slopes down by a continuation of hills. The north-eastern declivity towards the course of the Moldau and Elbe rivers is not abrupt; and here several lateral ridges detach themselves, and gradually sink as they approach the banks of the rivers.

The principal ridge, which extends about 112 miles, does not rise to a great height. The northern half presents on its summit extensive flats, evertopped here and there by some hills, which never attain an absolute altitude of more than 2500 feet. The southern half however is much more elevated, and some summits attain the elevation of the highest mountains in Scotland. Mount Heidelberg is the highest, and rises to 4622 feet; Mount Kubani to 4496, Mount Arber to 4582, Mount Rachel 4394, and Dreisselsberg to 4054 feet. The last mountain is on the boundaries of Bavaria, Bohemia, and Austria.

The lateral ridges which branch off to the north-east are much lower and do not contain any lofty summits, but some of them are of considerable extent; such particularly is the ridge which branches off nearly in the middle of the range where the high summits begin to rise, and which fills the country between the Wolinka and Beraunka rivers with high hills. This ridge is called *Erly-Wald*. Farther south is the *Lissi-Wald*, which afterwards declines more to the south and advances into the great bend which the Moldau forms in its upper course. [ELBR.]

The breadth of this range averages only from twelve to sixteen miles, yet it opposes great obstacles to the intercourse between the countries along its sides, on account

of the steepness of its south-western descent, its narrow glens, and its rugged valleys, which are sometimes covered by a swampy surface. Only a few roads traverse it. The most northern, which traverses the pass of Trachenreuth, runs through the depression at its northern extremity, and connects the town of Eger with Ratisbon. Farther south is the road which connects Nürnberg with Pilsen, and leads through the pass of Frauenberg. The road from Ratisbon to Pilsen runs through the pass of Waldmünchen. From Passau two roads lead to Bohemia; one terminating at Klettau traverses the pass of Eisenstein, and the other leading to Strakonitz, the pass of Winterberg: lastly, the road between Linz and Budweis goes by the pass of Freistadt. Thus we find that only six roads run over a mountain range extending 112 miles in length, and two of them are at its extremities; they are consequently from twenty to twenty-five miles asunder. The difficulties of crossing these mountains have probably long prevented the Germans from spreading farther to the east, and maintained the aborigines of Bohemia in the possession of their country; and perhaps the Germans would never have entered it, had they not found the other mountain-ranges inclosing Bohemia more easy of access. Even now the number of Germans inhabiting the country which skirts the Bohemian side of these mountains is smaller than in other districts of Bohemia, the population being almost entirely composed of Czeches.

Many rivers descend from this range. Some of them go to the Danube, and send their waters to the Black Sea; others fall into the Elbe, and go to the North Sea. Those on the south-western declivity have a short course, and fall into the Danube, which runs at no great distance from its base. The largest is the Regen, which joins the Danube opposite Ratisbon. On the side of Bohemia the rivers have a longer course. Here rises the Moldau, which is the true source of the Elbe river, and two of its most considerable affluents, the Wottowa with the Wolinka and the Beraunka.

The forest of Bohemia is mostly composed of primitive rocks. The highest part of the ridge and its most elevated summits consist of granite. Gneiss everywhere accompanies the granite, but prevails in the forest of Brdy, where it advances far into the interior of Bohemia. Mica-slate is also frequently met with in the same tract. Primitive clay-slate frequently covers the granite and gneiss formation.

Though the highest part of the ridge is barren and nearly without vegetation, the lower parts of its slopes are covered with extensive forests of lofty trees; but as the difficulties of the transport are great, it is impossible to bring the timber to a market, and consequently the forests would be nearly useless but for a fine white sand which is found in many places on the eastern slopes. This has given rise to numerous glass-houses, where the glass is made which is known all over the world under the name of Bohemian, and is preferred to English glass in most countries of Europe.

Metals are found in many places. Native gold is met with at Przi Bram and Horzowicz in the district of Beraun and in several other places, but in small quantity. Some rivers bring gold sand down, which is washed, especially the Moldau, the Sazawa, and the Wottowa. Silver is more abundant and worked with advantage in some places, especially at Przi Bram, where it is extracted from lead-ore. A small quantity of cinnabar is got near Horzowicz. Tin is worked in a few places. Lead is very abundant at Mies, Przi Bram, and Bleistadt. The iron mines are numerous, and are worked with great industry. Antimony, zinc, and cobalt are also common.

Some precious stones also occur, especially opals, chalcidones, and jasper, but the famous Bohemian garnets are not found in this range. Coals are found in considerable quantity on the northern lateral ranges, though they are less frequent than in the north-eastern districts of Bohemia. Great quantities of fine clay, fit for the manufacture of china ware, are found in the neighbourhood of Passau, and sent to many parts of Germany.

BOHEMIANS. [GIPSINS.]

BOHEMOND, the eldest son of Robert Guiscard, the Norman conqueror of Apulia and Calabria in the eleventh century. After Robert had become duke of Apulia and Calabria, and his brother Roger had made himself count of Sicily, Bohemond accompanied his father in his various expeditions to Greece and Illyria, against the emperor Alexis Comnenus. They took Corfu, and defeated the

Greeks near Durazzo. His father returning to Italy, Bohemond remained in Illyria with his Norman and Apulian army. He defeated the Greeks near Arta, entered Thessaly, and besieged Larissa. At his father's death, in 1085, Roger, Robert's second son, took possession of Apulia and Calabria, and Bohemond on his return from Greece found himself deprived of all share of his paternal inheritance. Roger, count of Sicily, Robert's brother, took the part of his nephew and namesake against Bohemond. A war ensued between the two brothers, which terminated by Bohemond accepting the principality of Tarentum, and leaving his brother Roger in possession of the rest. When the great Crusade was resolved upon in 1092, part of the Crusaders took their way through Italy, and assembled at Bari to embark there. Bohemond, bold and aspiring, resolved upon joining them, and trying his fortune in the East. Being at the time in his brother's camp near Amalfi, which town had revolted against Roger, he addressed the assembled warriors, painting to them in glowing colours the attractions and the merit of that holy war which was going to be carried on in Palestine; and he succeeded so well, that nearly the whole of his brother's army determined on taking the cross, amidst cries of 'Dieu le veut,' and proclaimed Bohemond for their commander. Roger being thus deserted by his troops was obliged to raise the siege of Amalfi. Both the prince of Salerno, and Tancred, the hero of romance, immortalized by Tasso, and who was Bohemond's cousin, being the son of Emma, sister of Robert Guiscard, agreed to follow Bohemond's banner. The Norman and Apulian expedition embarked at Bari, and landed at Durazzo, the scene of Bohemond's former exploits. Bohemond took his way by land across Macedonia, and his approach to Constantinople mainly contributed to induce the emperor Alexis to offer peaceful terms to the Crusaders. He was introduced to the emperor, who treated him with great distinction, and by his polite behaviour, aided by splendid presents, he prevailed on Bohemond and several of the other chiefs to swear allegiance to him for the conquests they should make in the East. Anna Comnena, the daughter of Alexis, has left a striking portrait of Bohemond. 'He was remarkably tall and handsome, his eyes were blue, his complexion florid, his demeanour haughty, his look fierce, and yet his smile was soft and insinuating; but she says that he was crafty and deceitful, a despiser of laws and promises. In the arts of cunning policy he appears to have been quite a match for her father. After the capture of Nicæa, 1096, Bohemond, who commanded the left division of the Crusaders, was attacked by a vast multitude of Turks near Dorylæum, and his division was mostly cut to pieces, but by his exertions he maintained the conflict until Godfrey of Bouillon came to his assistance and routed the enemy. At the siege of Antioch, when the Crusaders despaired of obtaining possession of the town, Bohemond found out an Armenian renegade who enjoyed the confidence of the Turkish commander, and who agreed to introduce him and his men by night within the walls. Taking advantage of this, he offered his brother Crusaders to give them possession of Antioch on the condition that they should bestow upon him the principality of the town. Some of the leaders demurred to this, but the Armenian could treat with Bohemond only; the Christian camp was suffering for want of provisions, and Kerbogha, the sultan of Mosul, was advancing against them with a large force. No time was to be lost, and all the chiefs, with the exception of Raymond of Toulouse, agreed that Bohemond should be prince of Antioch. The following night Phirous, the Armenian, introduced Bohemond and his men into the town, when nearly all the Mussulman population was massacred, June, 1098. At break of day Bohemond's red standard was seen flying over the loftiest tower of Antioch. The Christians were soon after besieged in their turn by Kerbogha, and after suffering the extremities of hunger they came out to offer the Sultan battle, in which the Saracens and Turks were completely routed, and Bohemond greatly signalized himself. When the Crusaders left Antioch in the spring of 1099 for Jerusalem, Bohemond accompanied them as far as Laodicea, and then returned to Antioch to consolidate his new possession. He afterwards received the investiture of his principality from the patriarch Daibert at Jerusalem. In an excursion into Mesopotamia he was taken prisoner by a Turkish emir, and remained two years in captivity. Both the sultan of Iconium and the emperor Alexis offered large sums to the emir in order to obtain

possession of Bohemond, who however contrived to persuade the emir to accept his own ransom, although of less amount, and to make alliance with the Christians against the sultan of Iconium. Returning to Antioch he found there the faithful Tancred, who had taken care of his interests during his absence. In 1103 Bohemond returned to Italy, intent upon raising enemies against his old antagonist the emperor Alexis, whom he accused of being secretly leagued with the Turks against the Franks. In 1106 he repaired to France, where Philip I. gave him his daughter Constance in marriage: Philip's natural daughter Cecil married Tancred. Upon Bohemond's return to Italy he collected a large force, and sailed from Bari for Durazzo. After several combats with Alexis' troops, he had an interview with the emperor, in which the latter acknowledged him prince of Antioch. Bohemond died in Apulia in 1111, and was buried at Canosa. His son, Bohemond II., succeeded him as prince of Antioch. (See Gibbon, William of Tyre, Mataterra's chronicle of Robert Guiscard, and Michaud, *Histoire des Croisades*.)

BÖHME, or BÖHM, frequently mis-written **BEHMEN**. In relating Böhme's life we retain the characteristic quaintness of his age.

There is a small market-town in the Upper Lusatia called Alt-Seidenberg (Brucker writes Palzo-Seidenburgum), distant from Görlitz about a mile and a half, in which lived a man whose name was Jacob, and his wife's name was Ursula. They were poor, but sober and honest. In the year 1575 they had a son, whom they named Jacob. This was that Jacob Böhme who was afterwards called the Teutonic philosopher. His first employment was the care of cattle, but when grown older he was placed at a school, where he learnt to read and to write, and was afterwards apprenticed to a shoemaker in Görlitz. Having served his time, in the year 1594 he took to wife Catharine the daughter of the butcher Johann Hunschmann, a citizen of Görlitz, by whom he had four sons. His sons he placed to honest trades. He himself became master-shoemaker in 1595.

Jacob Böhme relates that when a herdsboy he had a remarkable trial. In the heat of mid-day, retiring from his play-fellows he went to a stony crag called the Landskron, and, finding an entrance or aperture overgrown with bushes, he went in, and saw there a large wooden vessel full of money, at which sight, being in a sudden astonishment, he retired in haste without touching it, and related his fortune to the rest of the boys, who, coming with him, sought often an entrance but could never find any. Some years after a foreign artist, as Jacob Böhme himself related, skilled in finding out magical treasures, took it away and thereby much enriched himself; yet he perished by an infamous death, that treasure being lodged there and covered with a curse to him that should find and take it away.

He also relates that when he was an apprentice, his master and his mistress being abroad, there came to the shop a stranger, of a reverend and grave countenance, yet in mean apparel, and taking up a pair of shoes desired to buy them. The boy, being yet scarce promoted higher than sweeping the shop, would not presume to set a price on them; but the stranger being very importunate, Jacob at last named a price which he was certain would keep him harmless in parting with them. The old man paid the money, took the shoes, and went from the shop a little way, when standing still, with a loud and earnest voice he called, 'Jacob, Jacob, come forth.' The boy came out in a great fright, amazed that the stranger should call him by his Christian name. The man with a severe but friendly countenance; fixing his eyes upon him, which were bright and sparkling, took him by his right hand and said to him —

'Jacob thou art little but shalt be great, and become another man, such a one as the world shall wonder at; therefore be pious, fear God, and reverence his word. Read diligently the Holy Scriptures, wherein thou hast comfort and instruction. For thou must endure much misery and poverty, and suffer persecution, but be courageous and persevere, for God loves and is gracious unto thee;' and therewith pressing his hand, with a bright sparkling eye fixed on his face, he departed.

This prediction made a deep impression upon Jacob's mind, and made him bethink himself, and grow serious in his actions, keeping his thoughts stirring in consideration of the caution received. Thenceforward he frequented public worship much more, and profited thereby to the outward re-

formation of his life. Considering Luke xi. 13 — 'My Father in Heaven will give his spirit to him that asks him,' he desired that Comforter. He says that he was at last 'surrounded with a divine light for seven days, and stood in the highest contemplation and in the kingdom of joys whilst he was with his master in the country about the affairs of his vocation.' He then grew still more attentive to his duties, read the Scriptures, and lived in all the observance of outward ministrations. Scurrilous and blasphemous words he would rebuke even in his own master, who, being not able to bear this, set him at liberty with full permission to seek his livelihood as he liked best. About the year 1600, in the twenty-fifth year of his age, Jacob was again surrounded by the divine light, and viewing the herbs and grass in the fields near Görlitz in his inward light, he saw into their essences, use, and properties, which were discovered to him by their lineaments, figures, and signatures.

In like manner he beheld the whole creation, and from that fountain of revelation he wrote his book *De Signatura Rerum*. In unfolding these mysteries he had great joy, yet he looked carefully after his family, and lived in peace and silence, scarce intimating to any these wonderful things, till in the year 1610 he wrote his first book, called *Aurora*, or the *Morning Redness*.

This manuscript he did not choose to intrust to any man, till a gentleman of rank, an intimate friend of his, having got sight of it, prevailed upon him to indulge him with the perusal of it. This gentleman immediately took it to pieces, and with his own hand, assisted by other transcribers, copied it with amazing dispatch. Thus, contrary to the author's intention, it became public, and fell into the hands of Gregory Richter, superintendent of Görlitz, who making use of his pulpit for speaking without a gainsayer, to revile what and whom he pleased, endeavoured to stir up the magistracy to exercise their jurisdiction in rooting out this supposed church-weed.

The senate convened Jacob Böhme, seized his book and admonished him to stick to his last, and leave off writing books. The original manuscript of the *Aurora*, in Böhme's own handwriting, was (after having been seven and twenty years in the custody of the senate at Görlitz) on Nov. 26, 1641, presented by Dr. Paul Scipio, the then oulgermaster or mayor there, to George Pflug, marshal to the court of the elector at Dresden. Pflug, who was well affected to Böhme, was then on a visit at Görlitz. Pflug dispatched this manuscript to Abraham Wilhelm van Beyerland, a citizen and merchant of Amsterdam.

Upon the command of the senate he abstained from writing for seven years, after which he was moved again to write. The list of his works stands as follows. The books which he left unfinished are put in parentheses.

1. *Aurora*.
2. Of the Three Principles, 1619.
3. Of the Threefold Life of Man, 1620.
4. Answers to the Forty Questions of the Soul.
5. Of the Incarnation of Jesus Christ. Of the Suffering, Death, and Resurrection of Christ. Of the Tree of Faith.
6. Of the Six Points, great and small.
7. Of the Heavenly and Earthly Mystery.
8. Of the last times, to P. K.
9. *De Signatura Rerum*.
10. A Consolatory Book of the Four Complexions.
11. An Apology to Balthasar Tilken, in two parts.
12. Considerations upon Isaias Stiefel's book.
13. Of true Repentance, 1622.
14. Of true Resignation.
15. A Book of Regeneration.
16. A Book of Predestination and Election of God, 1623.
17. A Compendium of Repentance.
18. *Mysterium Magnum*, or an Exposition upon Genesis.
19. A Table of the Principles, or a Key of his Writings.
20. Of the Supersensual Life.
21. (Of the Divine Vision.)
22. Of the two Testaments of Christ, Baptism and the Supper.
23. A Dialogue between the enlightened and unenlightened Soul.
24. An Apology for the Book on true Repentance, against a Pamphlet of the Primate of Görlitz, Gregory Richter.
25. (A Book of 177 Theosophick Questions.)
26. An Epitome of the *Mysterium Magnum*.
27. (The Holy Weeks, or the Prayer Book.)
28. A Table of the Divine Manifestation.
29. Of the Errors of the Sects of Ezekiel Meths and Isaias Stiefel, or Antistiefelius II.
30. A Book of the Last Judgment.
31. Letters to divers Persons with Keys for hidden Words.

The publication of his first book made many learned men visit him, with whom much conversing he got the use of those Greek and Latin words that are frequent in his works.

Among the learned that conversed with him was a phy-

sician, Balthasar Walter, from Silesia, who had travelled in search of ancient magical learning through Egypt, Syria, Arabia, &c., where he found such small remnants of it, that he returned unsatisfied to his own country, where he became inspector of the chemical laboratory at Dresden. Having become acquainted with Böhme, he rejoiced that at last he had found at home, in a poor cottage, that for which he had travelled so far in vain. Walter introduced the appellation of *Philosophus Teutonicus*.

B. Walter went to the German universities, and collected such questions concerning the soul as were thought and accounted impossible to be resolved fundamentally, of which he made a catalogue, being forty in number, and sent them to Böhme, from whom he received answers to his satisfaction (which answers are public in many languages). Balthasar Walter came to Böhme and professed that he had received more solid answers than he had found among the best wits of those and more promising climates.

The translator of the said answers into English presented a copy to King Charles I., who a month after said, that if Böhme were no scholar, the Holy Ghost was now in men; but if he were a scholar, he was one of the best.

Doctor Weisner, after giving in a letter a curious account of the persecution of Böhme by Gregorius Richter, the primate of Görlitz, of Jacob's banishment by the senate, of their repealing their absurd and unjust order, goes on to say,— 'Yet still tired with the prelate's incessant clamour, they at length sent for him again, and entreated him that in love to the city's quiet he would seek himself a habitation elsewhere; which if he would do they should hold themselves obliged to him for it, as an acceptable service. In compliance with this friendly request of theirs he removed from thence. After this upon a citation, Jacob Böhme came to Dresden before his highness the prince elector of Saxony, where were assembled six doctors of divinity, Dr. Hoe, Dr. Meisner, Dr. Balduin, Dr. Gerhard, Dr. Leyser, and another doctor, and two professors of the mathematics. And these, in the presence of his highness the prince elector, began to examine him concerning his writings, and the high mysteries therein; and many profound queries in divinity, philosophy, and the mathematics they proposed to him. To all which he replied with such meekness of spirit, such depth of knowledge and fulness of matter, that none of those doctors and professors returned one word of dislike or contradiction. The prince his highness much admired him, and required to know the result of their judgments in what they had heard. But the doctors and examiners desired to be excused, and entreated his highness that he would have patience till the spirit of the man had more plainly declared itself, for in many particulars they could not understand him.

'To Jacob Böhme's questions they returned answers with much modesty, being amazed to hear from a man of that mean quality such mysterious depths.

'There were two astrologers present to whom, having discoursed of their science, he said, "Thus far is the knowledge of your art right and good, grounded in the mystery of nature; but what is over and above are heathenish additions."

'The elector being satisfied with his answers took him apart, and discoursed with him concerning difficult points, and courteously dismissed him.

After this Dr. Meisner and Dr. Gerhard, meeting at Wittenberg, expressed how greatly they admired the continued harmony of Scriptures produced at his examination. Many learned men and preachers now taught those doctrines of regeneration and the means of attaining it against which they formerly exclaimed as heretical. Böhme wrote in the albums of his friends,

"Wem Zeit ist wie Ewigkeit
Und Ewigkeit wie die Zeit
Der ist befreit von allem Streit"

'Soon after Böhme's return to Görlitz died his adversary the pastor primarius Gregorius Richter; and Böhme himself died three months and a half later.

'On Sunday, Nov. 18, 1624, early in the morning, he asked his son Tobias if he heard the excellent music? The son replied "No." "Open," said he, "the door, that it may be better heard." Afterward he asked what the clock had struck, and said, "Three hours hence is my time."

'When it was near six he took leave of his wife and son, blessed them, and said, "Now go I hence into Paradise;" and bidding his son to turn him, he fetched a deep sigh and departed. The new primarius refused to preach at

his funeral, feigning to be unwell, and his colleague, Magister Elias Theodorus, being compelled by the magistracy to preach on his death, began by saying he would rather have walked 100 miles than preach the funeral sermon.

'The physician at Görlitz, Dr. Kober, arranged his burial, which was performed with the usual ceremonies, to the due performance of which the clergy were compelled by the magistrates. His friends placed a cross on his grave, but his enemies pelted it with mud, and broke it to pieces. Jacob Böhme's wife died of the plague two years later. One of his four sons was a goldsmith; the others had learned other trades. All died soon after J. Böhme.'

He was lean, and of small stature; had a low forehead; his temples were prominent; was somewhat hawk-nosed; his eyes were grey and very azure; his beard was thin and short; his voice low, but he had a pleasing speech, and was modest and humble in his conversation. He wrote very slowly but legibly, and seldom or never struck out and corrected what he had written.

After Böhme's death his opinions spread over Germany, Holland, and England. Even a son of his persecutor Richter, being then a merchant's clerk at Thorn, edited at his own expense an epitome of Böhme's works in 8 volumes, and arranged their contents in a sort of index. The younger Richter became fond of Böhme's doctrines while he attempted to refute them. He printed of his extracts only about 100 copies; consequently they are now extremely scarce. The first collection of Böhme's works was published by Heinrich Betke, Amst. 1675, 4to. At the conclusion of the seventeenth, and in the first years of the eighteenth century, the works of Böhme were published and translated into Dutch at the expense of and by Abraham Wilhelm van Beyerland, who had bought a complete copy of Böhme's works from the advocate Hans Rothen von Baumgarten, at Görlitz. Beyerland also procured autograph copies, which he collated for his edition. Beyerland's editions are in 12mo., 8vo., and 4to. More complete than Beyerland's is the edition by Gichtel in 10 vols. 8vo. Amst. 1682. For this edition the manuscripts were bought from the heirs of Beyerland. This was reprinted with Gichtel's manuscript *marginalia*, Altona, 1715, 2 vols. 4to., and again with a notice of former editions and some additions from Gichtel's 'Memorialia,' 1730. There are some later editions of separate works. The best translation of his works into English is that by the celebrated William Law of Oxford, Lond. 1764, in two volumes 4to. Compare also Jacob Böhme's 'Theosophic Philosophy, unfolded by Edward Taylor, with a short account of the life of J. B. London, 1691-4; Jacob Böhm ein biographischer Versuch, Pirna, 1801-8; Jacob Böhm's Werke, Amsterdam, 1620, four volumes 8vo., 1682-8, 1698, and 1730, in ten volumes 8vo. Auszug aus Böhm's Schriften, Amst. 1718, and Frankfurt, 1801-8. There are also Dutch translations. The preacher and physician John Portage, who was born about 1625, and died in London 1698, endeavoured to systematize the opinions of Böhme in the following works: 'Metaphysica vera et divina.' This is translated into German in three volumes, Francf. and Leipzig, 1725-28; 'Sophia a detectio celestis sapientie de mundo interno et externo,' Amst. 1699; 'Theologia mystica sive arcana mysticaque doctrina de invisibilibus æternis, &c. non rationali arte sed cognitione intuitiva descripta,' Amst. 1698; Comp. Jac. Brucker's 'Hist. crit. Philosophiæ,' T. iv. P. I. Lipsiæ, 1766, 4, p. 695—706; 'Weismanni introduct. in memorab. eocl. hist. sacr.' Stuttg. 1719, 4 T. II. p. 1231, seq.; 'Spensers theologische Bedenken Theil.' 3 u. 4; Arnold's 'Kirchen-und Ketzler Historie,' Frankf. 1700, II. 629—652; 'Jo. Chr. Holzhausen capistrata Böhmico-larum rabula;' 'The Life of Jacob Behmen,' by Durand Hotham, Esq., 1654, 4to.; 'Memoirs of the Life, Death, Burial, and wonderful Writings of Jacob Behmen, now first done at large into English from the best edition of his works in the original German, with an introductory preface of the translator, directing to the due and right use of this mysterious and extraordinary Theosopher,' by Francis Okely, formerly of St. John's College, Cambridge, Northampton, 1780, 8vo. Claude St. Martin, who died at the beginning of the present century, published French translations under the title of 'Aurore Naissante;' 'Des Trois Principes;' 'De la Triple Vie;' 'Des Quarante Questions;' 'Censura Philosophiæ Teutonicæ seu epistolæ de Böhmio illiusque philosophia in Henr. Mori Oper. omn.' (philos.) Lond. 1679, fol. tom. i. p. 529 seq.; extracted with additions in J. Wolf, Jaegeri 'Hist. Eccl. Soc. xvii.' Ham-

burg, 1717, fol. 2. pp. 245-254. Against these additions H. Mori Opera i. p. 401. ii. pp. 347, 402, 446, 447, 610.

One of the most zealous supporters of Böhme's theosophy was Charles Hotham, who belonged to the noble family of that name, which has produced not only political but also theosophical martyrs. See 'Ad Philosophiam Teutonicam manufactio seu determinatio de origine animæ humanæ, viz. An a Deo creetur et infundatur, an a parentibus traducatur, habita Cantabrigiæ in Scholis publicis in comitiis Martii 3, 1646. A Carolo Hotham socio Petrensi et tunc uno ex procuratoribus academis. Lond. 1648.'

The following title will show that the disputes about Böhme became very warm. 'A true state of the case of Mr. Hotham, late fellow of Peter House, declaring the grounds and reasons of his appeal to parliament against the sentence of those members of the committee for reformation of the universities, who on May 22 last resolved *the writing and publishing of his book entitled "The Petition and Argument,"* &c. to be scandalous and against the privilege of parliament, and himself to be deprived of his fellowship in that college.' Printed in the year 1651.

Böhme and his followers were especially persecuted by the clergy, who seemed to deem his writings on theosophical subjects an infringement of the prerogatives of the clerical order. The ecclesiastics at Görlitz persecuted Böhme during his life, and refused to bury his corpse until they were compelled by the magistrates not to disgrace the earthly remains of a man who had led a harmless life and always been in strict communion with the Lutheran church. The admirers of Böhme were for the greater part not professional divines, but noblemen, country gentlemen, courtiers, physicians, chemists, merchants, and in general, men who were eager in the pursuit of truth, and who did not stickle for modes of speech and established formalities. The persecutions raised against him brought Böhme first into the notice of men of rank, who took delight in conversing with the poor shoemaker and his followers, while universities and ecclesiastical courts enacted laws against his opinions, and his persecuted disciples appealed even in England to the high court of parliament. Sir Isaac Newton, William Law, Schelling, and Hegel, were all readers of Böhme.

William Law, in the appendix to the second edition of his 'Appeal to all that doubt or disbelieve the Truths of the Gospel,' 1756, mentions, that among the papers of Newton were found many autograph extracts from the works of Böhme. Law conjectures that Newton derived his system of fundamental powers from Böhme, and that he avoided mentioning Böhme as the originator of his system, lest it should come into disrepute.

Böhme's theosophy consists in the endeavour to demonstrate in every thing its necessity by tracing its origin to the attributes of God. Consequently some of Böhme's phrases sound like the doctrines of Manichæan emanation, and have been misinterpreted as being such. Böhme traces the parallelism between the visible physical, and the invisible metaphysical world. His comparisons and images are not the essence of his theosophy, but only illustrative of thoughts which have commanded the admiration and approbation of some of the deepest thinkers, while others are apt to neglect him entirely on account of his errors in subordinate non-essentials. Böhme forms undoubtedly an important link in the chain of thought, which connects the present state of philosophy with the beginnings of former ages. He often produces magnificent ideas, but he occasionally supports his theory by false etymologies, and by chemical and astrological notions which have been long ago rejected. A specimen of false etymology is his derivation of the word *qualität* (i. e. quality) from the German *Qual*, i. e. *pain*, and *quelle*, i. e. *well, fountain, source*. He has now again many admirers in Germany, but perhaps no one would approve of this mode of demonstration.

The articles on Böhme in English works are often very incorrect, of which the following is a ludicrous instance:—'Behmen (Jacob), a shoemaker, liv'd at Görlitz, was remarkable for the multitude of his patrons and adversaries. He derived all his mystical and rapturous doctrine from Wood's "Athenæ Oxonienses," vol. i. p. 610, et "Histor. et Antiq. Academiæ Oxoniensis," lib. 2, p. 308.' Wood was born A. D. 1632, eight years after Böhme's death.

BÖHMISCH LEIPA. [LEIPA.]

BOHODUKHOFF, or **BOGODUKOFF,** a town in the Russian government of Charkoff in the Ukraine, and the

capital of a circle of the same name, is situated on the Merla, a small river which flows into the Vorskla. It was built in the year 1667, and is surrounded by ramparts of earth and a ditch. It contains four churches, about 1050 houses, and nearly 7000 inhabitants, whose chief occupation is tanning and preparing leather, as well as working it up into boots and shoes. Large flocks and herds are reared in its neighbourhood, and the place accordingly carries on a brisk trade in cow-hides, goat-skins, and fleeces. Considerable quantities of fruits and vegetables are also raised about Bohodukhoff. 50° 10' N. lat. 35° 40' E. long.; 1451 versts (about 967 miles) distant from St. Petersburg.

The circle to which this town gives its name, lies between 49° 42' and 50° 40' N. lat., and 32° 56' and 36° 20' E. long.; its area is about 1160 square miles; above three-fourths of this area are cultivated by the plough or the spade, and less than one-seventh part is occupied by woods. The number of inhabitants has increased during the last fifty years from 91,190 to upwards of 130,000. It contains four towns: Bohodukhoff; Khormynsk, a walled town with three churches and about 1700 inhabitants; Krasnokutsk on the Merla, with five churches, 800 houses, and about 5000 inhabitants; and Solotsheff, a walled town on the Uda, with four churches, nearly 1000 houses, and about 5000 inhabitants who are actively employed in cultivating grain, fruit, and vegetables, and rearing cattle.

BOII, a nation of antient Gaul, which made various immigrations into Italy and Germany. The district whence they originally came is not ascertained (D'Anville, *Notice de l'ancienne Gaule*), but it would appear that they were near the Lingones and the Helvetii. They are mentioned as forming part of the first Gaulish emigration recorded by Livy, Justinus, and others, which set off in quest of new lands, and under two chiefs, Bellovesus and Segovesus, both nephews of Ambigatus, king of the Bituriges. Bellovesus went over the Alps into Italy, while Segovesus crossed the Rhine into Germany, and penetrated to the skirts of the great Hercynian forest. The Boii would appear to have followed Segovesus, and to have settled in the heart of Germany, in the country called after them Boiohemum (Bohemia), from which they were afterwards driven away by the Marcomanni, a German nation, and withdrew south of the Danubius, to the banks of the Cenus (Inn). Bojodurum, now Innstadt, took its name from them. The Boii are mentioned also as having immigrated into Italy, together with the Lingones and other tribes, by passing over the Pennine or Helvetic Alps. The epoch of this immigration is a matter of doubt: some believe it to have been contemporary with that of Segovesus and Bellovesus, and they place it as early as 600 years B. C., whilst others believe it to have taken place nearly 200 years after, and not long before the march of the Gauls against Rome. (Niebuhr's *History of Rome*, vol. i., on the Gauls and their immigrations into Italy.) The Boii crossed the Po, and settled in the country between the Tarus, the Silarus, and the Apennines, and they took possession of the Etruscan city of Felsina, afterwards Bononia. [BOLOGNA.] The Boii were often engaged in war with Rome, and they obtained at times advantages over the Roman arms, but they were finally subjugated by Scipio Nasica, and part of their lands was taken from them. As they still continued restless, they were altogether removed by the Romans and sent across the Noric Alps, when they settled on the banks of the Dravus, near the Scordiaci. Having afterwards engaged in wars with the Getæ, they were almost entirely destroyed; and we find in Pliny (iii. 24.) a vast tract between the Dravus and the Danubius called 'Deserta Boiorum.'

We find the Boii engaged in the Helvetian immigration into Gaul in the time of Cæsar. Whether these were from some part of their tribe which had remained in Gaul, or whether they came back from Germany into Helvetia, is not known. After the defeat of the Helvetians, the Ædui begged of Cæsar that the Boii might remain among them, which being assented to, the Ædui settled them in a district between the Ligeris and the Elaver (Allier).

The Boii, from Bohemia, who had settled on the banks of the Cenus, became subject to the Roman empire, and formed part of the province of Vindelicia. During the decline of the empire they were exposed to the irruptions of the Marcomanni, the Thuringii, and other tribes who occupied their country, which afterwards took the name of Boioaria, or Boiaria, some say from the united names of the Boii and the Avari, a Pannonian tribe. From Boiaria the modern appel-

lation of Bavaria is derived. (Aventinus, *Annales Boiurum*.) There was also a district in Aquitania called Boii, near the sea, in the neighbourhood of Burdegala (Bordeaux.) (D'Anville, *Notice de l'Ancienne Gaule*.)

BOIL, called also phlegmon and furunculus, from *furo*, to rage, on account of the violence of the heat and inflammation attending it. A boil is a tumor of an inflammatory nature seated in the skin and in the cellular tissue beneath it. It may occur on any part of the external surface of the body, and it is of various sizes from the bulk of a pea to that of a pigeon's egg, which latter it seldom exceeds. The tumor is circumscribed, prominent, hard, of a conical figure, the base of the cone being broad, deep, and intensely red. The whole surface of the tumor is exquisitely tender, and is commonly attended with a very painful sense of burning and throbbing. Its natural termination is in suppuration, that is, in the formation of the matter called pus, but the progress is always slow and the process itself imperfect, the pus formed being generally scanty and never healthy. Only a few drops of purulent matter commonly mixed with blood flow from the most prominent or pointed part of the tumor, while there remains behind the germ, or what is commonly called the *core*, a purulent sloughy substance so thick and tenacious that it appears like a solid body. When this core is discharged, the pain entirely ceases and the opening heals spontaneously, but the removal of this is indispensable to the cure of the disease.

The complaint is never attended with danger, and seldom accompanied with fever, excepting when the tumor is seated over some peculiarly sensitive part, or when (as occasionally happens) several tumors occur at the same time in several places. Under such circumstances, in adults of irritable habits, and almost always in children, a good deal of constitutional disturbance is excited.

The disease, though local in its seat, is constitutional in its origin, and affords a good example of a class of maladies, a very large one, which are limited in their seat to a small spot, perhaps on the external surface of the body, but which have their source in the disturbance of some internal organ or of the system in general.

The internal organs, the derangement of which most commonly produces this external disease, are those which belong either to the digestive or to the excrementitious systems, or to both. In consequence of the disordered state of these organs, either perfectly pure chyle is not eliminated, or the blood is not properly depurated, or excrementitious matter is re-absorbed into it, the circulating fluids become contaminated, and the result is the irritation and inflammation of the surface.

The rational and successful treatment of this disease must therefore combine two objects,—the removal of the local malady, and the correction of the disordered state of the system in which it has its origin. The first intention is accomplished by assisting the process of suppuration, which, as already stated, is always tardy and imperfect, but must be rendered complete before the malady can be removed. It is only losing time and protracting suffering to attempt the discussion, or, as it is termed, the resolution of the tumor. In the first place, the practitioner is in possession of no means by which he can accomplish this object; and in the second place, if he could accomplish it, he would only send back into the system what the system has already sent to the surface in order to be discharged, and the re-entrance of which into the system, if it do not produce some internal mischief, will cause the re-appearance of the disease on some other part of the surface in an aggravated form. The proper external applications are repeated emollient poultices, as those made of linseed meal, which may be mixed, when the pain is violent, with conium, hyoseyamus, or opium. The suppuration is so imperfect that even the diligent use of poultices seldom causes the tumor to burst spontaneously with an aperture sufficiently large to allow of the discharge of the pus, together with the sloughy cellular substance that forms the core. As soon as any matter can be perceived in the tumor a free opening should therefore be made into it with a lancet, and as much of the matter and slough as can be forced out of it by tolerably firm pressure should be removed. Until the suppuration becomes healthy and the sloughy substance is entirely discharged, the linseed poultice should be continued. When healthy granulations begin to fill up the cavity, the application of a bit of lint and a simple pledget are the only dressings that are necessary.

While recourse is had to these external applications it is indispensable to correct the disordered state of the organs. This may be effected by a course of mild alterative medicines: the bowels should always be freely opened at first, and then regulated by gentle unirritating laxatives. At the same time strict attention should be paid to the diet, which should be of the plainest and simplest nature, nutritive but not stimulating, consisting of a moderate portion of plainly cooked animal food, without fermented liquors, without pastry, and without fruit.

BOILEAU, NICOLAS, SIEUR DESPREAUX, was born at Crosne, near Paris, or in Paris itself, on Nov. 1, 1636, and was the eleventh child of Gilles Boileau, first Registrar (Greffier) of the Great Chamber of the Parliament of Paris. His mother, the second wife of Gilles, was Anne de Niells. Boileau has written inscriptions, little worthy of remembrance, for a portrait of each of his parents. He eulogises his father as a man of probity and of gentle disposition, rather than as possessed of much talent; and of his mother, who died during his infancy, he says nothing more than that she pleased her husband by reflecting his good qualities.

Each of two elder brothers of Nicolas Boileau attained some distinction in his time. GILLES, born in 1631, pursued the law, and became successively Paymaster of the Hôtel de Ville in Paris, and Controller of the Royal Treasury. He gained also the coveted honour of admission into the French Academy; but his entrance to that body was much opposed by a literary *coterie*, with which he lived in almost perpetual warfare; and Pelisson, Ménage, and George Scudery are mentioned among his most powerful adversaries. Nicolas satirized his brother, in some lines which he afterwards cancelled, for having obtained a pension from Colbert, through the interest of Chapelains: but he has allowed a dull epigram to be transmitted to us, in which, perhaps ironically, he extols the literary and oratorical merits of Gilles at the expense of his fraternal qualities. They were reconciled, however, before the death of Gilles Boileau, which occurred in 1669. In his lifetime Gilles published a translation of the *Encheiridion* of Epictetus and of the *Tablet* of Cebes, and another of Diogenes Laertius: a controversial pamphlet addressed to Ménage, and one also to Costar. An unfinished translation of Aristotle's *Poetic* was found among his papers after his death; and his posthumous works, consisting of Poems, Letters, his Speech on admission into the Academy, and a translation of the fourth book of the *Aeneid* into French verse, were collected by Nicolas in one volume, 12mo.

JACQUES BOILEAU was born in 1635, and studied at the College of Harcourt, where he graduated in theology. He appears to have inherited his father's gentleness of spirit; for we are told that on the destruction by fire of a library which he had spent many years and much money in forming, he recommenced his collection without any expression of regret; a story which probably means that he bore a heavy misfortune with becoming manliness, and that he sought to remedy it by an obvious method suited both to his power and his inclination. He became Dean, Grand Vicar, and Official of the Diocese of Sens. In 1694 he was promoted to a Canonry in the Sainte Chapelle at Paris, and he died in 1716, at the advanced age of eighty-two. His avowed works are numerous, but chiefly on forgotten questions of theology; and he wrote much also either anonymously or under feigned names, as Marcellus Ancyranus, Claudius Fonteius, Jacques Barnabé, &c. A complete list of his works is given in the twelfth volume of the *Mémoires* of Nicéron; and we shall here mention the only one which is now occasionally remembered, 'Historia Flagellantium, sive de recto et perverso Flagellorum usu apud Christianos,' Paris, 1700, 12mo. The word *recto* was inserted before this volume could obtain the approbation of the censor; and the freedom with which the author has visited the abuses of superstitious penance occasioned much scandal, and exposed him to numerous attacks by zealots, which probably he had anticipated, and which certainly he disregarded. The treatise might as well have been left in the original Latin garb, but it was translated into French about a year after its appearance; and this version was republished in 1732 with many omissions, much softening, and an historical preface. It has also been rendered into English by De Lolme. Two repartees of Jacques Boileau which are preserved, show that he was a man of wit. When some one asked his opinion of the Jesuits, he described them as people

oblivious as Operas and Romances.—'Ah, my friend,' interrupted the confessor in conclusion, 'there is no harm in this, and I have nothing more to say to you.'

It is but justly therefore that he puts into his gardener's mouth a couplet, which speaks no more than truth of the character of his poetry:

'Mon maître, dirais-tu, passe pour un Docteur,
Et parle quelquefois mieux qu'un Prédicateur.'—*Sp. xi.*

The eulogy indeed is only the verification of a compliment which he really did receive from some citizens of Paris, who had passed the day in his company. At parting, they assured him that they had occasionally travelled in the same diligence with even Doctors of the Sorbonne, but that they never before had heard so many fine things said by a single mouth. 'In fact, Sir, you talk a hundred times better than any Pulpititeer.'

His purse was always open for purposes of benevolence. When indigence compelled the Advocate Patin to dispose of his library, Boileau paid down a third more purchase-money than had been offered for the collection, at the same time signifying that he bought only the reversion, and that the books were to remain the property of their original owner during his lifetime. In a similar spirit, he prevailed upon the King to continue the pension to Corneille, which had been revoked on Colbert's death; observing, that he himself should feel ashamed of participating in the national bounty, if so great a writer as Corneille were excluded from it.

The French critics are much inclined to compare Boileau with Pope, and naturally to give preference to the former; but, we think, so far as they admit comparison, the English poet may encounter it without apprehension. Both of them were great imitators; and as Pope was twenty-one years of age at the time of Boileau's death, the former had the advantage of one additional model, which there cannot be a doubt he studied very attentively. There are passages in the works of Pope which are undisguised translations, and which he avowed to be so. Every reader will at once perceive that the Fable of 'Justice and the Oyster' is one of these, which apologue Boileau transferred from the close of his first Epistle to the King, where it originally stood, to its present more appropriate place, at the end of the second Epistle. Pope has applied to Dryden that which Boileau said of Molière:

L'ignorance et l'erreur à ses naïssantes pièces,
En habits de Marquis, en robes des Comtesses,
Venaient pour defamer son chef-d'œuvre nouveau.
Pride, malice, folly, against Dryden rose,
In various shapes of persons, critics, beaux;

and, yet more literally, he declares that it is his intention

'happily to steer
From grave to gay, from lively to severe,'

as Boileau had already determined

'd'une voix légère
Passer du grave au doux, du plaisant au sévère.'

Memory or observation will supply innumerable other close parallels; and the 'Essay on Criticism' especially, one of Pope's earliest works, is very largely indebted to the 'Art of Poetry.' A remark however which has been made on Boileau himself, is not less applicable to Pope also; and is perhaps most of all applicable to him when he imitates Boileau—that he seldom borrows but to improve; that he seems, according to a forcible phrase of Le Bruyère, *créer les pensées d'autrui*.

One striking example of inferiority is adduced by Warton. Pope says (and he says it weakly and obscurely, notwithstanding the concluding line has become proverbial),—

'No place so sacred from such fops is barr'd,
Nor is Paul's church more safe than Paul's church-yard;
Nay, fly to altars, there they'll talk you dead;
For fools rush in where angels fear to tread.'

This satire is forced and unnatural, whereas the passage from which it is borrowed was suggested by a real incident:—

'Gardez-vous d'imiter ce rimeur furieux,
Qui de ses vains écrits lecteur harmonieux
Aborde en recitant quiconque le suit;
Et poursuit de ses vers les passans dans la rue;
Il n'est temple si saint des anges respecté
Qui suit contre sa muse un lieu de siècle.'

'which verses,' says Warton, 'allude to the impertinence of a French poet, called Du Perrier, who finding Boileau one day at church, insisted upon repeating to him an Ode, during the elevation of the Host, and desired his opinion whether or no it was in the manner of Malherbe.'

The 'Moral Essays' are immeasurably superior to the

'Satires,' inasmuch as Pope looked abroad into the world and upon mankind, while the narrower view of Boileau was circumscribed by Paris and the courtiers of the Grand Monarque. Each has failed in lyric poetry; and it almost seems as if the caparisons of the heroic couplet were indispensable for the development of their full powers, for the exhibition, if we may so speak, of their paces: yet Pope, happily for his reputation, has escaped any approach to the downright epigram with which the 'Ode sur la Prise de Namur' concludes. The 'Rape of the Lock' is far richer in imagery and much more playful in expression than the 'Lutrin'; and after-thought, which added to the one its graceful machinery of Sylphs and Gnomes, gave to the other only two more cantos with the lumbering personifications of Poetry and Justice. Of the sentiments which inspired the greatest effort of the English bard, the 'Eloise to Abelard,' Boileau, as we have already hinted, was perhaps physically incapable; and from the labour required by the version of Homer there can be little doubt that he would have shrunk in dismay.

Yet, after all the assertions of minute criticism, Boileau deserves a much higher station than he is allowed by Fontenelle. From the charge of a want of poetical feeling he has been well defended by La Harpe, who says even of the 'Satires' (among which he reckons the eleventh as the *chef-d'œuvre*)—'I like to read them, because I like good poetry, good wit, and good sense.' La Harpe is by no means an indiscriminate eulogist; and he unequivocally censures the 'Ode on the Capture of Namur.' He also very searchingly examines an opinion expressed by Boileau that Molière was the greatest genius of the age of Louis XIV.; and the whole chapter of the 'Lycée,' which is set apart to Boileau, affords the best commentary with which we are acquainted on a silly literary dispute, which has been agitated more violently upon the Continent than among ourselves, and which will last as long as the tempers of men continue to be divided as sanguine or saturnine; viz., the comparative excellence of the Romantic and the Didactic Schools of Poetry.

Boileau generally produced the last verse of his most elaborate couplets first in order. In his second 'Satire' occurs the following line—

'Dans mes vers recousus mettre en pièces Malherbe.'

La Fontaine, Molière, and other critical friends despaired of an appropriate rhyme to 'Malherbe,' when he enunciated—

'Et transposant cent fois le nom et le verbe.'

La Fontaine was enraptured, and declared that he would willingly barter the most celebrated of his 'Tales' for this single discovery. Whatever may be thought of this exaggerated flattery, the anecdote at least proves that La Fontaine was by no means jealous of the silence which Boileau has observed regarding him in the 'Art of Poetry'; a silence which La Harpe conjectures might arise from the scandal occasioned by the 'Contes' during one of the *primes* fits to which the latter years of Louis XIV. were subject. Marmontel denies the *sensibilité* of Boileau. Voltaire, in one place, speaks of him as having 'more wit than gracefulness'; in another, giving him the laudable praise of being the correct author of a few good pieces, he neutralizes even this measured applause, by adding that he was the Zouls of Quinault, and the flatterer of Louis; and finally, he contradicts himself by stating in a third passage, that without any doubt the 'Art of Poetry' is the work which reflects more honour than any other on the French language.

BOILING OF FLUIDS. When certain fluids are heated to such a degree as to be strongly agitated and produce much vapour, they are said to boil, or suffer ebullition. Under similar circumstances the temperature at which this occurs is always the same in the same fluid, and is called its boiling point, being the greatest heat which the fluid is capable of acquiring; when the vapour which arises from a boiling fluid is condensed, the resulting liquid is perfectly similar to that from which its vapour was produced, having suffered no chemical change.

There are some substances which usually exist in the fluid form, or which may be made to assume it by being heated, that cannot in strictness be said to have any fixed boiling point; and there are others that cannot be made to boil: thus when certain fixed oils are heated, instead of being converted into a vapour condensable again into oil, they suffer decomposition and yield inflammable gas; and the greater number of the metals, when heated and re-

dered fluid, suffer no ebullition, because they are incapable of being vaporized.

The circumstances attendant upon the boiling of water will supply a more familiar illustration of the nature of ebullition than those accompanying the boiling of any other fluid: we shall therefore commence with an account of them.

When water is heated, there is a point, just before it has acquired its highest temperature, at which a slight noise, or rather a succession of noises is heard, usually called *simmering*. This is occasioned by the formation of minute bubbles of vapour, at the bottom of the vessel, and nearest the source of heat, which, being specifically lighter than the water in which they are formed, rise into the upper and cooler part of it, and are then condensed. Soon after this, and when the whole of the water has acquired its highest temperature, the bubbles of vapour rise to the surface, and there bursting constitute steam, which, being transparent and colourless, is consequently invisible, but when it comes into contact with the cold air, it undergoes partial condensation, and is then visible, and appears as a mist.

The boiling point of water, which on Fahrenheit's thermometer, used in this country, is 212°, is subject to variation by altering the circumstances under which the ebullition takes place. Thus when it is stated to occur at 212° Fahrenheit, it is understood that the water is freely exposed to the air, and that the barometer stands at 30 inches, which is the average atmospheric pressure.

It is well known that the atmosphere presses with a force equivalent to a weight of fifteen pounds on every square inch of surface. By variations of this pressure the boiling points of fluids suffer great alteration; when it is increased the temperature of the boiling fluid is raised, and it is lowered by diminishing the pressure. Boyle appears first to have noticed these circumstances during his experiments with the air-pump; and it was afterwards observed by Fahrenheit that there was an occasional variation in the boiling point of water, even when the same thermometer was used at different times: this he found to depend upon the alterations of barometric pressure.

General Roy instituted a set of experiments to determine the temperatures at which water boils at the different heights of the barometer, and the following table contains a statement of his results:—

Barometer.	Boiling point.
26 inches	204°91
26.5	205°79
27	206°67
27.5	207°56
28	208°43
28.5	209°31
29	210°19
29.5	211°07
30	212°00
30.5	212°88
31	213°76

It appears from this table that the boiling point of water varies 0°88 of a degree for every half inch of variation of the barometer, and consequently every tenth of an inch which it rises or falls alters the boiling point of water 0°176 of a degree of Fahrenheit's scale.

Dr. Thomson (*Heat and Electricity*, p. 207) states that since the year 1817 to 1829 (both inclusive) the barometer has never been higher in Glasgow than 30°8 inches, nor lower than 28°417 inches, so that the boiling point of water has varied during that period from 213°408° to 209°164°, or almost 4° of Fahrenheit.

On ascending mountains, by the consequent diminution of atmospheric pressure, and in proportion to it, water is found to boil at a lower temperature. Thus on the summit of Mont Blanc, which is about 15,000 feet above the level of the sea, Saussure found water to boil at 178° of Fahrenheit, or 34° below its usual temperature.

The effect of diminished pressure in lowering the boiling point may be readily exhibited: remove some boiling water from the fire, and ebullition soon ceases, but it is renewed by placing it under the receiver of an air-pump, and quickly exhausting the air. Another, and very simple method of producing the same effect is to boil some water in a Florence flask; cork it while boiling, remove it immediately from the fire, and immerse it almost entirely in cold water, and then ebullition will recommence. This is occasioned by the sudden condensation of the steam which occupied the

upper part of the flask, and the consequent formation of a vacuum; the existence of which is proved by the rush of air into the flask on removing the cork.

According to the Rev. Mr. Wollaston (*Phil. Trans.* 1817), an elevation of 530 feet causes a diminution of 1° of Fahrenheit in the temperature of boiling water; but it will be observed that this determination, which is probably an accurate one, does not agree with the stated height of Mont Blanc, or the temperature at which water boils on its summit.

Professor Robison states that fluids boil in vacuo at 140° lower than under atmospheric pressure; consequently water so circumstanced will boil at 72°. Dr. Thomson informs us that he has seen water boiling briskly at 98° in Mr. Barry's apparatus for distilling oils in vacuo.

We have now described the circumstances under which the boiling point of water is lowered by diminishing the pressure; and we shall proceed to show how, by increasing the pressure, the boiling point is raised.

When water is heated in vessels from which its vapour cannot escape except by overcoming pressure, its boiling point is very much raised. This experiment may be made in Papin's digester, which is a strong iron or copper vessel, with a tight-fitting lid screwed down, and provided with a safety valve, loaded with any proper quantity of weights. In this way water may be heated to upwards of 400°; indeed, according to Muschenbroek, the temperature of water can be raised so as to melt tin, which fuses at 442°. A more convenient apparatus for this purpose was invented by the late Dr. Marcet. In this the pressure is indicated by the height to which the steam raises a column of mercury, and the temperature is shown by a thermometer. (Dr. Henry's *Chemistry*, vol. i. p. 126.)

According to Southern's experiments, the following atmospheres produce the annexed pressures and temperatures:

Atmospheres.	Inches of mercury.	Temperature.
1	29.8	212°
2	59.6	250°3
3	89.4	275
4	119.2	293°4
5	149	309°2
6	178.8	322°7
7	208.6	334°4
8	238.4	343°6

It is to be observed that the temperature of the steam is always equal to that of the water from which it is generated. When however what is termed high-pressure steam is suffered to escape into the atmosphere, its temperature is greatly reduced, not merely on account of the cold air with which it comes into contact, but by the great expansion which it undergoes, and the consequent conversion of sensible into latent heat. In this case it is so far from scalding like atmospheric steam, that it may be received upon the hand without feeling unpleasantly hot. When water is boiled in vessels which are not furnished with safety valves, or when from any accident they do not act or are overloaded, the strongest boilers burst with a tremendous explosion.

There are several circumstances which influence the boiling point of water besides those already noticed, though not to so great a degree. M. Gay Lussac found that water boiled exactly at 212° in a vessel made of tin plate, while in a glass one it acquired 214°; and he concludes that the boiling point varies according to the nature of the different vessels, and the state of their surfaces, in which the ebullition takes place, and consequently depends on their conducting power and the polish.

Dr. Bostock also found (*Annals of Philosophy*, vol. xxv. p. 196) that the boiling point of water is materially influenced by the presence of extraneous bodies. A saturated solution of common salt was placed over a lamp, and gradually heated up to 222° when it boiled strongly; a test tube, containing water deprived of air by boiling, was plunged into the heated brine, and in a second or two it began to boil; the lamp was then withdrawn, and the brine soon ceased to boil, but the ebullition continued in the water for some time longer; it subsided at about 218° or 217°, but was constantly renewed by dropping in pieces of cedar wood. The brine was again placed over the lamp, and a test tube was plunged into it, containing a portion of water, together with a thermometer. The water in the tube did not begin to boil until the thermometer had risen to between 216° and 217°, when ebullition first commenced; the fragments of wood were then dropped in, and as usual very much increased the ebullition; and it was found that

the water, kept at this temperature, had its ebullition promoted or suspended, according to the presence or absence of the extraneous bodies. Dr. Bostock concludes that in water the difference of boiling point occasioned by the circumstances described amounts to 4° or 5°, but in other occasionally to 50° or more.

The boiling point of water is also very materially altered by the presence of saline matter; there is indeed no one salt which diminishes it, but almost every one increases it, and commonly each to a different degree. The following are a few of the variations taken from the experiments of Mr. Griffiths:—

Name of salt.	100 parts by weight of solution containing parts by weight of dry salt.	Boiling temperature.
Sulphate of soda	31.5	213°
Nitrate of barytes	26.5	214
Sulphate of potash	17.5	215
Sulphate of copper	45	216
Sulphate of potash and copper	40	217
Chlorate of potash	40	218
Alum	52	220
Sulphate of magnesia	57.5	222
Common salt	30	224
Tartrate of potash	68	234
Sulphate of nickel	65	235
Muriate of ammonia	50	236
Nitrate of potash	74	238
Tartrate of potash and soda	90	240
Nitrate of soda	60	246
Acetate of soda	60	256

In these experiments it is stated that dry salt was used, but as it is not mentioned whether the salts were or were not anhydrous, it is impossible to draw any very satisfactory inferences as to the nature and quantity of the substance producing the variation of temperature, except in a very few cases; two of which may be remarked, as showing that the increase of temperature is not in direct proportion to the quantity of salt dissolved, and must therefore in some degree depend upon its nature. Thus 30 parts of common salt raise the boiling point 12°, while 50 parts of muriate of ammonia raise it 24°, but if quantity alone produced the effect, it should have required 60 parts of muriate of ammonia.

The following are the boiling points of some substances, which probably exhibit examples of the lowest and highest temperatures at which ebullition takes place; the bodies are considered as under the average atmospheric pressure:—

	Boiling point.
Muriatic æther	52°
Sulphuric æther (sp. gr. 0.7365 at 48°)	113
Bisulphuret of carbon	113
Acetic æther	160
Nitric acid (sp. gr. 1.5)	210
Oil of turpentine	314
Naphtha	320
Phosphorus	554
Sulphur	570
Sulphuric acid (sp. gr. 1.848)	600
Mercury	662

BOIS-LE-DUC, a fortified town, the chief place of the province of North Brabant in the kingdom of Holland, 51° 42' N. lat., and 5° 16' E. long.

This town was founded in 1184 by Godfrey III., Duke of Brabant, who possessed on the same spot a house in the middle of a forest in which he was accustomed to hunt, and hence the town has derived its name; Bois-le-Duc in the French, and s'Hertogenbosch in the Dutch language, signifying 'the Duke's forest.' Henry, the son and successor of Godfrey, caused the forest to be cut down, and surrounded the town with walls. In 1579 the town separated itself from the states, and was besieged both in 1601 and 1603 by Prince Maurice of Nassau. In 1629 it fell into the hands of the Dutch after a siege of four months, which is spoken of as having been one of the most remarkable that occurred during the Eighty years' war. In 1672 it was attacked by the French, who were obliged to raise the siege in consequence of continual rains, which caused the submersion of the marshy lands by which the fortress is surrounded. An action was fought near Bois-le-Duc in September, 1794, between the English and French, in which the advantage was gained by the latter, and in the following month the place surrendered to the army under General Pichegru. The last occasion on

which Bois-le-Duc was the scene of hostilities was in 1814, when, after being invested for several weeks, it surrendered to the Prussians under General Bulow. By a decree of Napoleon the town was declared in 1810 to be united to the French empire.

Bois-le-Duc is situated near the confluence of the rivers Dommel and Aa, the waters of which after their junction receive the name of the Diest or Dieze, and flowing to the north-east for about ten miles fall into the Maas at Crove-cœur. Bois-le-Duc is a clean and well-built town, about five miles in circumference, and contains many good streets and squares: it is intersected by canals, over which are upwards of eighty bridges. The town-hall, which stands in the principal square, is a handsome building, resembling the Stadt-house of Amsterdam, but on a smaller scale: it has a steeple with a fine chime of bells. The town contains six churches, four of which are appropriated to the service of the Romish, and two to the Reformed religion. St. John's Church is one of the finest in the kingdom: its foundations were laid in 1280, and it was not finished until 1312: its roof is supported by 150 columns. During the reign of Louis Bonaparte this church was taken (1810) from the Protestants, by whom it had been held since 1629, and given to the Catholics, who are very numerous in the town. A citadel was built here in 1629 by Prince Frederick Henry of Nassau under the direction of the states-general, in order to keep the Catholics in check, and the name Papenbril was given to it, a name which indicates its object and use.

According to statistical tables published by the Dutch government in 1829, the population of Bois-le-Duc in December, 1814, amounted to 13,071 souls. During twenty-five years, from 1790 to 1814, the number of births was 11,549, and of deaths 11,932, showing a rate of mortality of 1 in 27, a result which indicates an unhealthy climate, and may probably be attributed to the marshy nature of the surrounding district.

The town contains an academy of painting, sculpture, and architecture, and a grammar-school, in which Erasmus and Gravesande received instruction.

Linen thread, ribbons, pins, needles, and cutlery, are manufactured in Bois-le-Duc, which is favourably situated for carrying on trade by means of the Diest, the Maese, and the canal recently constructed from this town to Maastricht, which goes by its name.

BOJADOR, CAPE, on the west coast of Africa, 26° 12' N. lat., and 14° 10' W. long., forms one of the projecting points of the Great Desert, or the Sahara. It rises to a considerable height, and is the western extremity of a rocky ridge, which runs eastwards into the desert, but it is not known to what distance. This ridge is called by the Moors Jebel Khal, or the Black Mountain, according to Jackson.

The coast which extends northward to Cape Nun is one of the most dangerous on the whole globe, being so flat, that one may walk a mile into the sea without being in water over the knees. Vessels consequently strike at a very considerable distance from the beach. Besides, this low coast is always enveloped in a hazy atmosphere, which extends for many miles out at sea. Jackson thinks that this phenomenon is produced by the strong winds raising the sand of which the numerous hills at some distance from the shore are composed, and filling the air with it. But it must be remarked that the phenomenon which is here observed between the shore of the Sahara and the Canary Islands is repeated more to the south, between Cape Verd and the Cape Verd Islands, and his explanation is hardly admissible in the latter instance. The danger caused by the combination of such disadvantageous circumstances is still increased by the currents along the whole coast from the Straits of Gibraltar to Cape Blanco setting in towards the land with great force and rapidity. The trade-winds also which prevail in the Sahara, and generally in the sea to the westward of the Canary Islands, rarely blow in the channel which divides these islands from the continent, but are here replaced by a westerly or north-westerly wind, from which it will be evident that the dangers which here await the unwary navigator are of no common description. It sometimes happens that a vessel strikes on the sands of this coast when the captain thinks he is about to make the Great Canary or Teneriffe; and we can hardly be surprised that so many vessels are wrecked on a coast which is not visited for the purpose of trade, except by a few fishing barks from the Canaries. Jackson says that he knew of thirty vessels, seventeen of them English, which had been

lost on it between 1790 and 1865; and he is inclined to think that their number was much greater, because most of them are quickly destroyed and never heard of. The unhappy sailors whose fate it is to be cast away upon this shore fall into the hands of the Moors, and have to undergo all the hardships of a most severe slavery in the desert.

The difficulties which oppose the progress of vessels near Cape Bojador was the reason why the Portuguese navigators in the beginning of the fifteenth century employed eighteen years in discovering the coast between Cape Nun and Cape Bojador. Though the former had been doubled in 1415, it was not till 1432 or 1433 that Gilianes succeeded in passing the second. The name Bojador is from the Portuguese verb *bojar*, which signifies to bend outwards, and make a convex projection, and hence it is applied to a part of a coast or a cape, which projects into the sea in a rounded form. (Barros, *Dec. I.* liv. i. c. 2, 4; Rennell's *Investigation of the Currents*, and Jackson's *Account of Morocco*.)

BOJARDO, MATTE'O MARI'A, Count of Scandiano, was born at Scandiano in 1434, of a noble and ancient family. His ancestors were lords of Rubiera, a small town between Reggio and Modena, but they exchanged this fief for that of Scandiano, the feudal castle of which lies at the foot of the Apennines, seven miles south of Reggio. To the fief of Scandiano were added several villages and territories around, given to the Bojardo family by the princes of Este, who were sovereigns of Modena and Ferrara. Bojardo was the son of Giovanni Count of Scandiano and of Lucia Strozzi of Ferrara, who was related to the Strozzi of Florence, and sister to Tito Vespasiano Strozzi, who, as well as his son Ercole, were known as Latin poets of considerable celebrity in their time. Young Bojardo studied philosophy, medicine, and law at the university of Ferrara, and he made himself well acquainted with the Latin and Greek languages. After completing his studies he became attached to the court of his sovereign, Duke Borso d'Este, and was one of the noblemen who accompanied that prince to Rome in 1471, when Pope Paul II. gave Borso the investiture of the dukedom of Ferrara. After Borso's death, which occurred the same year, Bojardo enjoyed the friendship of his brother and successor, Duke Ercole I. In 1472 Bojardo married Taddea, daughter of the Count Novellara of the house of Gonzaga. In 1473 he went to meet and escort to Ferrara Ercole's bride, Eleonora, daughter of King Ferdinand of Naples. In 1478 he was made governor of Reggio, and in 1481 governor of Modena, which place he held till 1487, when he resumed his former station of governor of Reggio. He died at Reggio, 20th December, 1494, and was buried in the church of Scandiano. His administration is recorded to have been equitable and mild: he was averse to severe punishments, and especially to that of death. His attachment to the Duke Ercole appears to have been personal and sincere, if we are to judge from his writings. Bojardo was a wealthy noble who had a small court of his own at his castle of Scandiano, and the tone of his poetry bespeaks his independence and lofty bearing. He was a favourable specimen of the later generations of the feudal barons of Italy, before French invasion and Spanish conquest transformed them into servile courtiers.

Bojardo wrote a comedy, 'Il Timone,' which is partly taken from Lucian's Timon. He also translated into Italian the Golden Ass of Apuleius, and Lucian's dialogue of 'Jucius or the Ass.' He likewise translated Herodotus and Xenophon's 'Cypripædia,' which latter however has never been printed.

Bojardo wrote many lyrical pieces of considerable poetical merit, which were published after his death: 'Sonetti e Canzoni,' 4to. Reggio, 1499. He also wrote some Latin as well as Italian eclogues, which Venturi has lately published for the first time, together with a selection of his lyrics and the Timone under the title of 'Poesie di Matteo Maria Bojardo,' 8vo. Modena, 1820. But the work for which he is best known is the 'Orlando Innamorato,' a romantic poem in ottava rima, in sixty-nine cantos. Bojardo took for his subject the fabulous wars of Charlemagne against the Saracens, the theme of many an old legend and romance, but he placed the scene in France and under the walls of Paris, which he represents as besieged by two hosts of Infidels, one from Spain and another which had landed from Africa on the south of France. He adopted Orlando, the Roland of the French romances, for his hero; but while others had re-

presented him as the champion of Christendom, passionless and above frailty, Bojardo makes him fall in love with Angelica, a consummate coquette, who had come all the way from the farthest Asia to sow dissension among the Christians. By these means Bojardo introduced a fresh plot in the action of his poem. Bojardo, a feudal lord, living at a court where gallantry was in fashion, and where he was on a footing almost of equality with the highest, was led by the taste of his audience to employ the language of love and flattery in his poem. His lordly style is very different from the easy though nervous simplicity of his contemporary Pulci, who composed his 'Morgante' for the amusement of the domestic circle of Lorenzo de' Medici, a citizen of the republic of Florence. At Ferrara, as well as in the other Italian principalities of the time, the spirit of feudal chivalry, although fast declining, was not altogether extinct. The laws, the duties, the customs, and courtesies of chivalry were studied as a science, in which Bojardo, owing to his birth and rank, was early initiated, and he therefore could describe them with a feeling of consciousness and with a gravity which is not found in other romantic poets who did not enjoy the same advantages. Even among the flights of romantic hyperbole Bojardo appears perfectly serious. His mind, stored with classical learning, was familiar with the conduct of epic narrative. The design of his poem is grand, the characters are well delineated, the various threads of his argument cross each other without confusion, but they are all left interrupted by the abrupt breaking off of the poem at the end of the ninth canto of the third book, when the author was perhaps hardly arrived at the middle of his narrative. Bojardo himself accounts for this interruption by alluding to the 'Gallic storm' which was then bursting upon Italy, and scared away his romantic muse.

'Mentre ch'io canto (oimè Dio redentore)

Veggio l'Italia tutta à fiamma e a foco
Per questi Galli, che con gran valore
Venon per disertar non sò che loco;
Però vi lascio in questo vano amore
Di Fiordespina ardente a poco a poco:
Un'altra fiata, se mi fia concessu,
Racconterovi il tutto per espresso.'

(Last stanza of the last canto of the *Innamorato*.)

Bojardo was writing this towards the close of 1494, when Charles VIII., with a formidable army, had just invaded Italy, and was marching to the conquest of Naples. He entered Florence in November, spreading consternation everywhere before him. On the 20th of the following December Bojardo died at Reggio. The subject of his poem was afterwards resumed by Ariosto. [ARIOSTO.]

The first two books, containing sixty cantos of the 'Innamorato,' were printed at Venice in 1486. They were printed again together with the nine cantos of the third book, which were all Bojardo wrote, at Scandiano in 1495, under the direction of Count Camillo, his son. Several reprints were afterwards made at Venice and at Milan, all more or less incorrect. Nicolò degli Agostini wrote a continuation of the 'Innamorato' in three books, which however is very inferior to the original. In 1545 Lodovico Domenichi published an edition of Bojardo's 'Innamorato' with many verbal and orthographical corrections. But before this, Berni had written his *Rifacimento* of the 'Innamorato,' which was published in 1541-2, and obliterated the editions of the original poem of Bojardo, the copies of which became very scarce, and the very name of Bojardo was almost forgotten. [BERNI.] After three centuries of unmerited neglect, a new and correct edition of Bojardo's text of the 'Innamorato' has been lately made by Panizzi, with notes and a life of Bojardo, London, 1831.

Bojardo wrote also a sort of chronicle of the dark ages of Charlemagne and his successors, of the crusades, the wars of the Normans and Saracens in South Italy, &c., 'Istoria Imperiale di Riccobaldo Ferrarese tradotta del Latino.' He called it a translation from Riccobaldi, a chronicler of the thirteenth century, but it is, in fact, a compilation, partly from Riccobaldi's work, 'Pomarium, sive Historia Universalis,' and partly from other sources. Muratori, 'Rer. Ital. Scriptores,' has published both Riccobaldi's 'Pomarium' and Bojardo's 'Istoria Imperiale.' The latter contains many strange historical blunders and anachronisms, which serve to show how imperfect historical knowledge was in Bojardo's time, while they throw much light on those popular and confused traditions which gave rise to the stories contained in the romantic poems of Italy, and especially in the 'Innamorato.'

Mazzuchelli has published a medal in his collection, which was struck in honour of Bojardo in the year 1490, having his likeness on one side, and on the other a Vulcan forging darts, assisted by Venus and Cupid, with the legend 'Anor vincit omnia.' (*Museum Mazzuchellianum*, tom. i. tab. 29.)

The castle of Scandiano, which still exists, though in a dilapidated condition, is now used as a storehouse for corn. The family of Bojardo has been long extinct. (See on Bojardo's poem, Dr. Ferrario, *Storia ed analisi degli antichi Romanzi di Cavalleria*, &c., as well as Panizzi's edition and *Life of Bojardo*, already mentioned.)

BOKHĀ'RA, called also USBEKHISTAN, is a country situated in Central Asia between 36° and 42° N. lat., and 63° and 70° E. long.

This country, which by the Greeks and Romans was called Sogdiana or Transoxiana, and by the Persian and Arabian authors of the middle age was celebrated under the name of Mawaralnahr, borders on the north on an extensive desert called Kizil Koom, and on the north-east is divided from the khanat of Khokand by the mountain-range of Akhdagh. The small khanats of Ramid and Hisser separate it from Badakshan on the east; on the south it is separated from the highlands of Afghanistan by the khanat of Koondoo and the desert of Kharasm or Desht Kowan, which extending farther north on both sides of the river Amoo (Amoo-Déria), joins the desert of Kizil Koom and separates Bokhara from Khiwa.

Bokhara forms the south-eastern corner of that remarkable depression which extends northwards to Saratow on the Volga in Southern Russia, and southwards to the Hindoo Koosh. The surface of this extensive depression, which occupies all the countries to the north and east of the Caspian Sea and those surrounding the Sea of Aral on all sides to a great distance, is nearly a desert, the soil of which is commonly a stiff clay of great aridity, covered here and there by sandy hills of small elevation. Bokhara partakes of the disadvantages of such a soil, but being surrounded by high mountain-ranges at a short distance on the east and south, it enjoys a considerable supply of water, by means of which the industry of the inhabitants has changed considerable tracts into fertile fields and beautiful gardens.

Neither the great range of mountains which border the high table-land of the Chinese province of Thian Shan Nanlu on the west, and on our maps are called Bolor Tagh, but more properly Tartash Dagh, nor the range of the Hindoo Koosh, advance to the boundary of Bokhara. They remain at the distance of sixty miles and upwards from it; but some offsets of the Tartash Dagh enter the country. Such are the Akh-Tagh (White Mountains), which advance to the neighbourhood of Samarcand north of the river Zarafshan, and the Kara-Tagh (Black Mountains), which extend to the south of the same river about the same distance, if not farther, west. These ridges, and a few others of less magnitude, make at least one-fourth of Bokhara rather mountainous, and supply the remainder of it with the water necessary to agriculture. The remainder is an open plain, on which small insulated hills rise to the height of from eight to twenty feet, sometimes extending only a few yards, and sometimes a hundred or even two hundred. These hills, as well as the plain on which they stand, are composed of clay, covered with moving sand which also forms hills in some places, but these hills are of a different form and still lower.

This plain is also uncultivated, except along the banks of the rivers, where the fields and gardens extend sometimes to a distance of only half a mile, but sometimes to ten miles. The three principal rivers, along which perhaps nine-tenths of the cultivated lands are situated, run from east to west, and are the Zur-ulshan, the Kashka, and the Amoo-Déria.

The Zarafshan, called also Kohik, and formerly Sogd, rises in the high mountains, where the Akh-Tagh and Kara-Tagh branch off from them a great distance east of Samarcand, and first traverses the valley formed by these two ranges. Near Samarcand it enters the plain, and between that place and the town of Bokhara it fertilises the Meeankal, the most populous, rich, and fertile district of the whole country. Before it reaches Bokhara it divides into two branches, of which the northern, called Vafkend, after having fertilised the country along its banks for many miles, is at last exhausted and lost in the clayey sand. The southern branch passes the town of Bokhara to the north at

the distance of six or seven miles, then declines to the south, and terminates at a distance of about twenty miles from the Amoo-Déria in a lake called Kara-kool or Dengis (the lake). This lake, which is about twenty-five miles in circumference, is surrounded on all sides by sand-hills. It is very deep and its water is salt, though its only feeder is a fresh river. It is connected with the river Amoo by some canals of irrigation, which terminate in the river near Chard-jooee.

The Kashka or Kurshee rises in the Kara-Tagh nearly in the meridian of Samarcand, and passes through Shuhr Subz and the town of Kurshee, below which it is exhausted and lost in the desert. The district of Shuhr Subz yields rich crops of rice and cotton, and the neighbourhood of Kurshee is covered with gardens and orchards.

For a description of the river Amoo, we refer to the article Oxus. We shall here only observe that the fertile lands along the Zarafshan extend from Moodjan east of Samarcand to Chard-jooee, upwards of 200 miles, and those along the Kashka probably more than sixty: along the Amoo they are not continuous, but frequently interrupted by uncultivated lands. The most fertile district on the banks of the Oxus is that which surrounds the town of Balkh, where the river Balkh, a tributary of the Amoo, is divided into numerous canals. [BALKH.]

These cultivated tracts offer a very pleasing aspect. Few lands are better cultivated than these plains, covered with houses, orchards, and fields divided into small squares called *tanab*, of which the edges are formed by a fine turf raised about a foot above the plain for the purpose of retaining the water which has been introduced into them. The numerous canals, as well as the roads, which are very narrow, have commonly rows of large trees planted alongside them. As the water of these canals does not run on the same level, they form at their junction small falls, all which, taken together, renders these tracts a very agreeable country.

The climate is regular and constant. The summer commences at the beginning of March and lasts till October. In this season it does not rain: the thermometer rises in the cultivated grounds to about 90°, and in the deserts to 100°. The nights are cold. October is the first season of rain, which continues for two or three weeks. In November and December it begins to freeze a little, and sometimes a small quantity of snow falls; but even in the latter month some fruits, as melons, are left in the gardens. The coldest month is January, in which the thermometer generally falls to twenty-seven degrees of Fahrenheit, and sometimes, though not frequently, to six. Occasionally the snow covers the ground for a fortnight. The rains begin again on the 7th or 15th February, and last to the end of this month. They are immediately followed by a considerable degree of warmth, and in a few days vegetation has attained its full vigour. The mildness of the climate shows that the surface cannot be at any considerable elevation; probably it is not more than 800 feet above the level of the Caspian, or 500 above that of the Black Sea. In winter and in summer violent storms blow more especially from the N.W., which raise a great quantity of fine sand, by which the atmosphere is so filled, that it assumes a grey hue like a fog, and distant objects become invisible. In the desert, travellers are not able to distinguish objects which are only a few steps distant. To these winds may be attributed the frequency of ophthalmia among the inhabitants: that this disease is very common is proved by an hospital for blind persons which exists in the town of Bokhara. In other respects the climate is healthy.

The industry of the natives is most conspicuous in the cultivation of their lands. The larger and the smaller canals, both of which are numerous, must have required a good deal of labour when they were first made, and they are still kept up at a considerable expense. Besides this the agricultural labour is rather more difficult than in Europe. The irrigation of the fields can only be effected in winter, from December to the middle of March, and in summer when the rivers are supplied with water by the melting of the snow on the mountains. Even the Zarafshan is dry for three or four months in summer.

Rice is only cultivated in the Meeankal and in Shuhr Subz; the rice of Shuhr Subz is more esteemed than that of the Meeankal, but it is less valued than that brought from India. Wheat is sown in autumn, and cut in July; and directly afterwards the ground is prepared for peas, which give

a crop the same season. Burnes says that 'south of the Oxus the wheat yields a crop for three successive years. When the harvest is finished the cattle are turned in upon the stubble fields, and in the ensuing year the same stalks grow up to ear. The second crop is good, the next more scanty, but it is reaped a third time.' The other grains which are cultivated are barley and jawaree (*Hokus saccharatus*). As there are no natural pastures in Bokhara, trefoil and the jawaree are cultivated for that purpose. Of pulse, peas, beans, and haricots are raised in great quantity.

Cotton, which forms one of the principal exports of this country, is carefully cultivated every where. Hemp also is raised, but not used as in Europe; it serves only to produce an inebriating drug, called in India *bang*, and from its seed oil is pressed. The latter is also obtained from the seed of cotton and the sesamum.

On the low hills near Kurahce and Balkh is a small yellow flower called esabaruck, which is used as a dye, and produces a better colour than the rind of the pomegranate. The creeping roots of the vine yield a colour that is dark-red, and is as much used as madder, which is also raised. Indigo is imported from India. Sugar is not grown, but a saccharine gum exudes from the shrub called the camel's thorn, which is collected and used as sugar very extensively. Tobacco is cultivated in many places: that of Kurshee is the best.

The vegetables raised are turnips, carrots, onions, radishes, brinjals, and a variety of greens; the beet-root is cultivated in extensive fields.

Bokhara is celebrated for its fruits, but more for quantity than quality. The orchards contain the peach, plum, apricot, cherry, apple, pear, quince, walnut, fig, pomegranate, mulberry, and grape. But Burnes found most of the stone-fruit inferior to that of Persia, only excepting the apricots of Balkh. There are several sorts of grapes, and some of a very fine flavour. The raisins prepared here are not inferior to any in the world; but the wines of Bokhara have little flavour. This however seems only to proceed from the defective mode of making them; for some persons who have paid more attention to their preparation have obtained wines similar to port and hermitage. Mulberries are dried like raisins, and a syrup is extracted from them as well as from grapes.

In the gardens great quantities of melons, pumpkins, and cucumbers are raised. Of melons there are two different species, and some of them grow to such a size, that they measure four feet in circumference: in taste they surpass the celebrated fruit of Isfahan. A kind of molasses is extracted from melons: Bokhara appears to be the native country of this fruit.

The mountainous portion of the country yields timber, which is floated down the Zar-afshan as far as Bokhara and Kara-kool in rafts. In the plain only willows and poplars are found; the latter are used for house-building.

Sheep and goats constitute one of the principal riches of Bokhara. The sheep have large tails, which sometimes grow to such a size as to yield fifteen pounds of tallow. A peculiar description of sheep has a jet-black curly fleece, which is much esteemed in western Asia and eastern Europe. It is peculiar to the district of Karakool, and cannot be transplanted to other places without degenerating. The skins of the male lambs are most highly prized, and the lambs are commonly killed a few days after their birth, never later than a fortnight. The annual export of these skins amounts to about 200,000. The goats of Bokhara are the same kind as those of the Kirghis: they yield a shawl-wool only inferior to that from Tibet.

Camels are numerous but high priced, on account of the continued demand, all the traffic of the country being carried on with them. They shed their hair in summer, from which a water-proof cloth is made. The camel with two humps is frequent: it is lower than the dromedary, yet bears greater burdens by 140 pounds; the one carries 640, and the other only 500 pounds English.

Horses are not raised in Bokhara, but are brought from the desert of Desht Kowan, where the Toorkmans have a very good breed, more remarkable for strength and swiftness than beauty. The horned cattle are of moderate size, and not numerous. The Toorkmans bring butter to Bokhara in sheep-skins. The asses are large and strong, and used both for saddle and burden.

The wild animals are few: tigers of a diminutive species, wild hogs, antelopes, wild asses, foxes, wolves, jackals, and cats are most common. Bears are found in the moun-

tains, and rats, tortoises, and lizards in the deserts, but no serpents.

Of birds only eagles, hawks, cranes, plovers, water-fowl, and wild pigeons have been noticed. Fish abound in the Amoo river and Lake of Dengis; in the former some species attain a large size.

Silk is a staple article in Bokhara, and is raised in considerable quantities, especially along the banks of the Amoo river, where even the wandering tribes for nearly three months in the year are engaged in rearing silk-worms.

Gold is found among the sands of the Amoo, and collected from it in many places along its banks. All other metals are imported from Russia. Salt is dug out in masses in some parts of the desert, and on the banks of the Amoo, below Chard-jooee. Alum and brimstone are got in the neighbourhood of Samarcand, and sal ammoniac in its native state occurs in the mountainous district.

The most remarkable towns of Bokhara are the present capital of the same name, Samarcand, and Balkh. Besides these are Kurshee, which, according to Burnes, contains 10,000 inhabitants; and Kara-kool, to which Meyendorff assigns 30,000 inhabitants, observing however that it is smaller than Kurshee. There are some towns of moderate size in the Meenkal, but the rest are small, containing only from 300 to 500 houses.

Bokhara, being situated between the two elevated tablelands of Asia, has frequently been invaded by the nations who inhabit each of them, and on such occasions a portion of the conquering nation has remained in the country and settled there. At present eleven different nations may easily be distinguished according to Meyendorff, namely Uzbecks, Tadjicks, Toorkmans, Arabs, Persians, Mongols or Kalmucks, Kirghis, and Kara-Kalpaks, Jews, Afghans, Lesghis, and gipsies.

The Uzbecks compose by far the greatest number of the inhabitants. They are the last of the nations who have subjected this country to their sway: they say that, before this event, they inhabited the countries about Astrakhan. About the beginning of the sixteenth century they invaded Tooran. The structure of their body and their language prove that they belong to that widely-spread race, which up to our times was known by the name of Tartars, but is now, with more propriety, distinguished by the name of Turks. The characteristics of their face are a flattened nose, projecting cheek-bones, narrow eyes, which frequently have a somewhat oblique position, and very little beard. The Uzbecks partly continue the erratic life which the whole nation led before their arrival in Bokhara; others are employed as officers by government; and a few apply themselves to agriculture, commerce, or the mechanical arts. These latter inhabit the large cities and their vicinity.

The Tadjicks consider themselves as the aborigines of the country, and as the descendants of the ancient Sogdi and Bactriana. Their body is stout and short, their complexion florid, and in features they resemble the European. The Tadjicks are very industrious. They cultivate the soil, and apply themselves to commerce, manufactures, and all the mechanical arts. The merchants who visit Orenburg and the great fair of Nishnei Novogorod are there called Bokharians, but they are Tadjicks.

The Toorkmans, Kirghis, and Kara-Kalpaks belong to the Turkish nation. The Toorkmans inhabit the desert plain to the west of the Amoo river, and acknowledge their dependency on the khan of Bokhara only when it suits their interests. The Kirghis and Kara-Kalpaks are few in number, and live north of the Zar-afshan, and in the vicinity of Kurshee.

The Arabs and Persians settled here at the time when this country was subjected to the kaliphs of Bagdad. Many of the latter have also been brought to this country as slaves.

The Mongols and Kalmuks settled here at the time of Tshengis Khan's conquest; some families also about 1770, when the Turgot Mongols abandoned Russia and emigrated to Zungaria, or the Chinese province of Jhian Shan Pelu.

The few Afghans and Lesghis in Bokhara are said to be the descendants of hostages which were brought here by the famous Timur when he subjected their respective countries. Both at present speak their own languages.

The Jews and gipsies have settled here voluntarily. Meyendorff, who visited Bokhara in 1820-21, estimated the whole population at nearly two millions and a half, namely:—Uzbecks, 1,500,000; Tadjicks, 650,000; Toork-

mans, 200,000; Arabs, 56,000; Persians, 40,000; Mongols, 20,000; Kirghis and Kara-Kalpuks, 6000; Jews, 4000; Afghans, 4000; Lesghis, 2000; gipsies, 2000: total, 2,478,000. He estimated the surface of the cultivated districts at about 6500 square miles, and thinks that they are inhabited by about one million and a half, so that those tribes who live entirely a nomadic life would amount to about a million. Burnes however thinks that the whole population of the country can only be estimated at one million. It is easy to see that such estimates cannot be relied on.

The mechanical arts are not neglected in Bokhara, and some commodities are even made for exportation. The most extensive manufactures are those of cotton and silk; and some kinds of cloth, in which both materials are combined, are in great demand in Russia for morning dresses of the rich nobility. The dye of all their manufactured goods is excellent. The Bokharians do not understand the art of tanning so well as the Russians, but they make excellent Marocco leather. Their swords are good, but much inferior to those of Persia.

The towns of Samarcand and Bokhara were some centuries ago famous as seats of learning, and were much resorted to by students from all the Mohammedan countries of Asia. At present the number of foreigners who live here for the sake of study is considerable: the medresses, or colleges, are numerous, though the instruction is now limited to the study of the Koran and its numerous commentaries, and some metaphysical subtleties. After having acquired this stock of learning, the students become muderris or mollahs. But the lower classes of the people are less instructed than in other Mohammedan countries, and the greatest part of them can neither read nor write. The Tadjicks, who wish to employ their children in commerce, take greater care of their instruction than the other tribes. The children of rich people learn to read, write, and repeat the Koran by heart.

Two languages are spoken in Bokhara, the Persian and the Turkish, the former by the Tadjicks, the inhabitants of the towns, and the better instructed and richer portion of the Uzbecks. This language differs very little from that which is used in Persia. The Turkish language is general among the Toorkmans, Kirghis, and those Uzbecks who still lead a nomadic life.

The government is despotic, but, as it is regulated on the laws of the Koran, the authority of the sovereign is controlled by the ulémas, or the corporation of priests and lawyers.

The khan of Bokhara is the most powerful of the princes of Toorkistan, and maintains a standing army of about 25,000 men, of which only 4000 are infantry. The artillery consists of forty-one pieces of cannon, mostly small field-pieces, with four mortars. But as a great portion of his subjects are nomadic tribes, who are always ready for military enterprises, and bound to send, if required, a certain number of horsemen, he may easily raise his army to 90,000 or even 100,000 men.

(Meyendorff's *Voyage d'Orenbourg à Boukhara*; Burnes's *Travels into Bokhara*; Arrowsmith's *Map of Central Asia*; Burghaus' *Map of Iran and Turan*.)

BOKHARA, the capital of the khanat of the same name, is in 39° 48' N. lat., 64° 26' E. long., in a level country, surrounded by gardens, which render it impossible to see it except at a small distance. It is from eight to nine miles in circumference, and is said to contain 8000 houses and 70,000 inhabitants; Burnes estimates its population at 150,000.

Bokhara is of a triangular shape, and enclosed by a wall of earth about twenty-four feet high, and as wide at its base, but only four feet wide at the top. In this wall are eleven gates, built of bricks, with a round tower on each side, in which a small number of soldiers are stationed. The widest street measures about seven, and the narrowest only three or four feet in width. The houses are built of sun-dried bricks on a frame-work of wood, and are all flat roofed. They are arranged in the Oriental manner, presenting towards the street a mere wall without windows, with a gate in the middle leading to a court-yard, round which the rooms are placed, which generally receive the light through the doors. The town is intersected by canals, which receive their water from the river Zar-afshan, which is six or seven miles from the town. It is afterwards distributed to sixty-eight wells, or rather cisterns, each about 120 feet in circumference. But this distribution is made only once a

fortnight. The palace of the khan stands on a hill, about 200 feet high, having the form of a truncated cone. It is enclosed by a wall about sixty feet high, which has only one gate, opening into a large corridor. This corridor, formed by vaults which seem to have been built many centuries ago, leads to the flat top of the hill, where the edifices stand in which the khan and his court are lodged. They are composed of a mosque, the dwellings of the khan and his children, the harem, which is surrounded by a garden and concealed by trees, and a house in which the vizir of the khan, called cooh-beghi, performs the duties of his station: there are also lodgings for the guards and slaves, and stables.

The most remarkable edifices of Bokhara are the mosques, of which there are about 360 in the town alone. The principal mosque, named *Mesgidi-Kalan*, stands opposite the royal palace, on the other side of the great square called *Segistan*, and occupies a square of 900 feet. Its dome is about 100 feet high. On the front bricks of different colours are so disposed as to form different designs of flowers tied together, and others contain sentences of the Khoran. The prevailing colour of these bricks is blue, but those of the inscriptions are white. Some mosques are only built of earth.

Attached to the principal mosque is the minaret of Mirghiarab, which is 180 feet high, and its base upwards of seventy feet in circumference. It diminishes in width as it rises, and Meyendorff considered it the finest monument of architecture in Bokhara.

Bokhara contains a greater number of colleges, called medresses, than any other Mohammedan town of equal size, and partly on this account it is called *El Sherifah*, the saint, or noble. The number of medresses amounts to about sixty, great and small, a third of which, according to Burnes, contain upwards of seventy students, but many have only twenty, and some only ten. These edifices are generally in the form of a parallelogram, two stories high, and enclose a spacious court-yard. In each story are two rows of chambers, one having its windows and doors to the court-yard, and the other to the street. These chambers are sold to the students, who in this manner acquire a claim to a certain yearly maintenance from the college. The medresses have considerable revenues, the whole of the bazaars and baths of the city having been erected by pious persons, and left for the maintenance of the medresses and mosques.

The number of public baths is eighteen. Several vaulted chambers are built about a large basin filled with warm water. The fuel is brought from the desert, and consists of small shrubs. Some of them are of large dimensions generally they produce an income of about 1000.

As Bokhara is the most commercial town of Central Asia, much has been done to facilitate the sale and transport of merchandise. There are fourteen caravansarais, all of them built on the same plan, though of very different dimensions. They are square buildings of two stories, enclosing a court-yard. The rooms round the court-yard are used as warehouses, and let to the merchants. The bazaars are numerous and extensive, some of them being upwards of a quarter of a mile in length. In the shops with which they are lined on both sides, every sort of merchandise is exposed to sale, with the exception of woven goods, which are sold in large edifices built for that purpose. Several of them, consisting of some hundreds of small shops, contain only the silk goods which are manufactured in the town, and others the cottons, linens, and brocades of India, Persia, England, and Russia.

The number of shops on the great square, or *Segistan*, is likewise considerable. Tents of different colours are filled with the more common manufactures of the country; but the greater part of the place is a market, in which the fruits of the country, consisting of grapes, melons of an extraordinary size, apricots, apples, peaches, pears, and plums, are sold; here likewise are exposed to sale the grain of the country, as rice, wheat, barley, jawarce, cotton seed, &c., in short all the necessaries of life. The active commerce which Bokhara carries on with all the neighbouring countries brings to this town the merchants of nearly all the nations of Asia. On the *Segistan* a stranger may converse with Persians, Jews, Turks, Russians, Kirghis, Chinese, Toorkmans, Mongols, Cosacks, Hindus, and Afghans, besides the Tadjicks and the Uzbecks, the inhabitants of the town.

The Tadjiks compose by far the greater part of the inhabitants, amounting to three-fourths of the whole. They are merchants, manufacturers, and artists. The number of Jews and Hindoos settled at Bokhara is considerable, and they enjoy a sufficient degree of toleration to enable them to live happily. Though they are not permitted to build temples, to set up idols, or walk in procession, they live unmolested; and in all trials they have equal justice with the Mohammedans.

No duties are levied on the commodities which are exported, and only a small duty on those which are imported, and these are only paid when the articles are sold. A Mohammedan merchant has only to swear by the name of the prophet and to declare himself poor, to be relieved from all duties. Justice is strictly administered according to the Khoran.

Bokhara has for many centuries been a place of extensive commerce, and its geographical position must always ensure it considerable advantages in this respect. It is probable that the countries north of the Caspian Sea and the sea of Aral would be entirely debarred from any commercial intercourse by land with those of southern Asia by the great deserts that lie between them, were it not for the fertile oasis in which Bokhara is situated. The same deserts, and in addition to them impassable mountains, would prevent all immediate commerce between the table-land of Central Asia and that of Persia or Iran, had not the merchants of Bokhara devised means for traversing both with safety. Consequently we find that Bokhara is a centre, from which six commercial routes diverge; three towards the north lead to Russia and the table-land of Central Asia, and three towards the south connect it with Persia, Afghanistan, and India.

The road which leads to the high table-land of Central Asia runs from Bokhara along the banks of the Zarafshan to Samarcand, here passes the river, and then extends in a north-eastern direction through the desert to Oorutapa, beyond which place it traverses the mountain-range which divides Bokhara from Khokand, and afterwards descends to the banks of the Sir Deria (Jaxartes of the antients). Along this river it passes through the towns of Khoend and Khokand to Marghulan, and then in a south-eastern direction to Oush, from which place it leads over the mountain-pasa of Tereek to Koksoo and Khashgar. The Bokharians take to Khashgar woollen cloth, coral, pearls, cochineal, brocade, velvet, fur, especially of otters and martins, leather, sugar, large looking-glasses, copper, tin, needles, glass, and some iron utensils. They bring back in exchange a great quantity of indifferent tea, china, some silk goods, raw silk, rhubarb, and silver. In this branch of commerce from 700 to 800 camels are employed.

Two roads lead to Russia, one on the east of the sea of Aral, and the other between it and the Caspian. The latter is shorter, and passes along the Amoo Deria to Khiwa, and thence through Saraitshik and Astrakhan. But this road can only be used when the Bokharians are at peace with the khan of Khiwa, and the Russians exercise a severe authority over the little horde of the Khirghis, which inhabits the desert between the northern extremity of the sea of Aral and that of the Caspian. When the Bokharians fear being pillaged either by the inhabitants of Khiwa or the Khirghis, they take the other and longer road, which passes through the desert of the Great Horde of the Khirghis, and afterwards runs to Orenbourg or Troisk. From these places, as well as from Astrakhan, the goods are transported to the fair of Nishnei Novogorod, where nine-tenths are sold. The Bokharians bring to Russia chiefly rhubarb, raw cotton, cotton goods, skins of martins, lamb-skins, fox-skins, dry fruits, silken goods, especially for morning-dresses, carpets, shawls of Cashmere and of Persia, and tea; and take in exchange cochineal, spices, sugar, tin, sandal-wood, woollen-cloth, leather, wax, iron, copper, steel, small looking-glasses, otter-skins, pearls, Russian nankin, utensils of cast-iron, needles, coral, cotton-velvet, cotton-handkerchiefs, some brocade, glass, and a small quantity of linens and Indian muslins. They employ 3000 camels in this trade.

Three roads lead from Bokhara to Persia and Afghanistan, one to Meshed, the second to Herat, and the third to Cabool. The first passes in a south-western direction from Bokhara to Charjoee on the Amoo Deria, traverses in the same direction the Desht Kowan to Merve and Serukhs, and then passes off westward to Meshed. The road to Herat passes west of Kurshee to Kirhee on the Amoo

Deria, and hence through the eastern and smaller portion of the Desht Kowan to Andkhoo. At this place it turns west to Meimoon. It passes the Moorghaub river, and traversing a mountain-range enters Herat. The Bokharians bring to Persia a portion of the goods imported from Russia, and besides raw cotton, silk, cloth of their own manufacture, woollens, spices, and rhubarb; they take back the common shawls of Persia, used in Bokhara as turbans, girdles of a yellow colour, wooden combs, carpets, and turquoises. About 600 camels are employed annually in this branch of commerce.

The road to Cabool passes from Bokhara to Kurshee, and thence through a desert to the Amoo Deria, which it passes at Khojusalu. Hence it turns eastward, and passes through Balkh and Khooloom, from which latter place it runs southward along the river Khooloom, till it enters the mountains which extend to the neighbourhood of the town of Cabool. Before it reaches that town it traverses the valley of Bameean. This road and its continuation through Peshawur, Attoek, and Lahore, connects Central Asia with India, but it is less frequented than the others on account of the unsettled state of Afghanistan, and the small authority which the sovereign of Cabool possesses among the mountaineers of this country. This commerce is entirely in the hands of the merchants of Cabool, and of the Hindoos of the Punjab and Shikarpore. They import shawls of Cashmere and Cabool, silken brocade, fine muslins, pearls, and precious stones, and a great quantity of indigo; and export raw cotton, paper, iron, copper, glass, cochineal, and some of the goods manufactured in the country. (Meyendorff and Burnes.)

BOLBEC, a town in France in the department of Seine Inferieure (Lower Seine) on the road between Le Havre and Rouen, 17 miles from the former, and 34 from the latter, and 110 miles N.W. of Paris; it is in 49° 35' N. lat., 0° 28' E. long.

Bolbec was not a place of any note in the early or middle ages. It was a dependency of the county of Eu, and was in the district of Caux. Expilly, in his *Dictionnaire des Gaules, &c.* (Paris, 1762), speaks of it as a place of some trade, especially in leather and lace; he says there were also some manufactures of woollen stuffs, and one of knives, which were in good repute on account of having been well tempered. In 1765 the town was almost entirely destroyed by fire: it was rebuilt and has since greatly increased, the improvement of the cotton manufacture having been the great cause of its prosperity. "A few years since and Bolbec was only a poor little country town ('une faible bourgade'); it is now one of the most important manufacturing towns. There is no poor-house, and, so to speak, no poor at Bolbec, a town of 9000 inhabitants. 'This town,' says M. Cartier (and his observation deserves attention because he is sub-prefet), 'has no local tax on commodities ('octroi'), yet it receives daily embellishment, because the order and economy which prevail in a private family regulate the municipal expenditure.'" (Dupin, *Forces Productives et Commerciales de la France*, Paris, 1827.)

Bolbec and the neighbouring town of Lillebonne were the first places in which machinery was applied to the spinning of cotton yarn. From near the commencement of the present century the inhabitants have been much engaged in this branch of business, and in weaving cheap and substantial fabrics of middling degrees of fineness, as well as in printing cottons. The following table, taken from M. Dupin, will show the activity of the district of which Bolbec is the centre:—

	Workmen.	Value of goods produced.	
In spinning	886	2,481,600 francs.	£106,749
„ preparing for weaving	3,650	9,949,800	428,004
„ weaving	11,226	2,047,500	88,076
„ the manufacture of printed calicoes	2,410	10,612,600	456,515
„ tanning	34	220,340	9,478
	18,206	25,311,840	£1,088,822

valuing the pound sterling, according to M. Balbi's table, at 23.247 francs. To the productions of the industry of Bolbec already mentioned may be added cutlery, lace, coverlets and ticking for beds, linen and cotton handkerchiefs, woollens, hosiery, and ribbons. We know not whether its cutlery maintains its reputation for goodness.

The town is situated in a very picturesque valley, watered

by the little river Bolbec, which flows into the Seine. It is a handsome place, with a well-built parish church, said to have been erected while the English were in possession of Normandy. The situation is excellent for trade. Its manufacturers draw their supply of cotton (the raw material for their manufactures) from Hâvre, their coal from the districts of Fécamp and Harfleur. They find a market for their productions in Rouen, the great mart for cotton goods; while the port of Hâvre enables them to export those articles which are suited to the wants of the colonies. (Dupin; Robert; *Dictionnaire Géographique*; Reichard, *Descriptive Road Book, &c.*) There is a considerable market for horses. The population by the census of 1832 was 7063 for the town itself, or 9630 for the whole commune.

Before the Revolution Bolbec had a priory in the nomination of the abbot of Bernay.

The industry of the district in which Bolbec is situated may be estimated from the table given above, from M. Dupin. It is further shown by the fact that the little river Bolbec, whose whole course does not probably exceed ten miles, supplies water, or acts as the moving power to 113 different works. It passes the towns of Bolbec and Lillebonne.

BOLBOCERUS (Entomology), a genus of coleopterous insects of the family *Geotrupidae*, *Scarabæus* of Linnaeus. The species of this genus are remarkable for their short compact form, above appearing almost spherical; the male is armed with an erect horn springing from the head, the female has merely a tubercle in the same part; the thorax has frequently four small horns, or tooth-like processes, arranged in a transverse line on the anterior part; the antennæ are eleven jointed, the three terminal joints form a compact round knob, the middle joint being almost enclosed by the other two; one mandible is armed internally with two teeth, the other is simple; the anterior portion of the mentum is entire; the elytra are striated.

These insects live upon dung, and excavate cylindrical holes in the ground under the mass, in which they deposit their eggs enveloped in a ball of the excrement.

There are about sixteen species known: their most common colour is brown or yellowish, and sometimes black. In this country but two species have occurred, *B. mobilicornis* and *B. testaceus*. *B. mobilicornis* is of a pitchy black colour, and about one-third of an inch long; the head in the male sex has a recurved horn; antennæ with the club red; thorax punctured, and furnished with four tooth-like projections on the fore part; elytra striated; legs and body inclining to a red colour.

B. testaceus is entirely of an ochre colour; head with two tubercles; thorax sparingly punctured; elytra with punctured striæ. About the same size as the last, of which by some it is supposed to be a variety. Both of these species are very rare.

BOLCHOW, a circle in the northern part of the province of Orel in European Russia; between 53° 43' and 54° 50' of N. lat., and 34° 58' and 36° 26' of E. long.; it is watered by the Oka, Nugra, and Bolchowka, possesses a soil well adapted for the growth of grain, and is chiefly valuable in an agricultural point of view. It is well peopled, and a portion of the inhabitants are employed in stocking-knitting; the Bolchow stockings indeed find their way into distant markets in Russia. Bolchow, the chief town of this circle, is the most considerable place in the whole province, Orel only excepted. It is situated at the confluence of the Nugra with the Bolchowka, the first of which streams falls into the Oka about ten miles E. or W. of the town. Though all the houses, with the exception of six, are of wood, it is well built. Its foundation is of remote date, for it was an ancient family possession of the Russian sovereigns, and is known to have suffered great disasters during the inroads of the Crimean Tartars, as well as in the civil wars with which Russia has been distracted at various periods. It contains twenty-two churches, fourteen of which are of stone and eight of wood, a monastery, and the convent of Nova-Petscherskoi, 1800 houses, and a population of nearly 15,000. The town has manufactures of leather, soap, hats, shoes, gloves, stockings, &c. and carries on a brisk trade with the interior in hemp, rape oil, tallow, hides, colonial produce, shoes, stockings, &c. together with fruit, raised in the immediate neighbourhood. 53° 26' N. lat., 35° 53' E. long.

BOLE. An earthy mineral which occurs in amorphous masses in various countries, as in Armenia, Saxony, in

Tuscany, at Sienna, in Ireland, and in Scotland in the Isle of Skye.

The colour of bole is various, either yellow, brown, red or brownish, and pitch black; it is dull, has a greasy feel, and adheres to the tongue. Its fracture is conchoidal, yields to the nail, and the streak is shining. When put into water it readily absorbs it, emits bubbles of air, and falls to pieces. The Armenian bole, according to Wiegand, consists nearly of

Silica	.	.	.	63.13
Alumina	.	.	.	22.67
Iron	.	.	.	11.00
Loss	.	.	.	3.20
				100.

The Lemnian bole, called also Lemnian earth, was anciently an article of materia medica, and kept by apothecaries in small pieces under the name of *terra sigillata*: these were impressed on one side with the figure of a goat, &c. According to Pliny it was also used as red pigment.

Klaproth found the composition of this bole to be

Silica	.	.	.	66
Alumina	.	.	.	14.5
Oxide of iron	.	.	.	6.
Soda	.	.	.	3.5
Water	.	.	.	8.5
A trace of lime and magnesia				
				98.5

The only bole at present used is as a coarse red pigment, for which purpose it is calcined and levigated, and vended in Germany under the name of Berlin and English red. (*Aikin's Dictionary of Chemistry.*)

These earths were formerly employed as astringent, absorbent, and tonic medicines. They might be slightly serviceable as absorbents, in the same way as putty powder is used in the present day, when sprinkled over excoriations of the skin. Any tonic power which they possessed was due to the oxide of iron, which is now administered in a purer state. These once celebrated articles have fallen into merited disuse: they are still however employed in the East, and occasionally as veterinary medicines in Europe, where earths of a similar kind are found abundantly among volcanic, basaltic, and the older calcareous rocks, and are called after the different countries in which they are found. Those which have less colour are called *Bolus alba*, are procured in Bohemia, Salzburg, &c., and consist of lithomarge, which is formed of silica and alumina with water, and a little oxide of iron. The bole Armenian must not be confounded with the *lapis Armenius*, which is a native carbonate of copper. The *terra Lemnia* is sometimes employed to signify the pulp of the fruit of the *Adansonia digitata*, the baobab or monkey-bread, which is used as an astringent for the cure of dysentery by the inhabitants of Senegal.

BOLETIC ACID was first procured by Braconnot from the *boletus pseudo-ignarius* by the following process: the expressed juice is to be evaporated to the consistence of a syrup, and then treated with alcohol, which leaves a white matter; this is to be washed with alcohol, then dissolved in water, and precipitated with a solution of nitrate of lead; the precipitate diffused through water is to be decomposed by sulphuretted hydrogen gas; by evaporating the remaining solution there are obtained impure crystals of boletic acid, and a very acid mother-water, composed of fungic and phosphoric acids. The crystals of boletic acid are redissolved in alcohol, which leaves a calcareous salt, and by evaporating the solution purer crystals of boletic acid are procured.

Boletic acid is colourless, crystallizes in four-sided prisms; its taste is acid, like that of bitartrate of potash; it reddens litmus, does not alter by exposure to the air; is gritty, like sand, between the teeth. It is soluble in 180 parts of water at 68°, and in 45 parts of alcohol. By heat the greater part of it is sublimed either in prismatic crystals or in fine powder; but towards the end of the operation some empyreumatic oil is formed, and there is a strong smell of acetic acid. It has the peculiar property of precipitating the peroxide of iron from solutions, but not the protoxide.

This acid forms salts with the alkalis, earths, and with metallic oxides; they are called *boletates*. They are not important compounds, none of them being applied to any use. (Berzelius, *Traité de Chimie*, tom. 5, p. 102.)

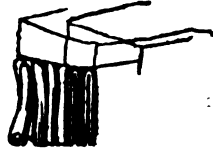
BOLETOBIUS (Entomology), a genus of coleopterous insects of the section *Brachalytra* (Macleay), and family *Tachyporidae*, *Staphylinus* of older authors. Generic characters: head long, and pointed anteriorly; antennæ with the basal joint rather long and slender; the three next joints slender, and nearly of equal length, the remaining joints gradually increasing in width to the last, inclusive; palpi rather long and slender; thorax narrower before than behind, the hinder angles rounded; elytra smooth, or indistinctly striated; body long, widest at the base, and tapering to a point at the apex; legs moderate, tibiæ spinose, the four posterior with long spines at their apices.

The species of this genus reside in boleti and fungi: in the latter they occur in the greatest abundance, particularly when in a state of decay. They are all exceedingly active, and their smooth slender bodies and pointed heads render it an easy task for them to thread their way with rapidity through the putrescent fungi.

B. lunatus (Linnæus) is one of the most beautiful and largest species of the genus, and is not uncommon; it is about a quarter of an inch long. The head is black; the antennæ have the three basal joints yellow, the remaining black, with the exception of the terminal joint, which is yellow; the thorax and legs are yellow; the wing-cases are of a blue-black colour, with an oblique yellow spot on the shoulders; the body is yellow, with the apex black.

About eighteen species of this genus have been found in this country, almost all of which are varied with yellow and black. Many have the wing-cases yellow, with two black spots, one on each side at the apex; some have also the region of the scutellum black. (Stephens's *Illustrations of British Entomology*.)

BOLE'TUS, an extensive genus of fungi, consisting, according to the old botanists, of leathery masses, which are sometimes of considerable thickness, and having the spores lodged in tubes which occupy the same situation as the plates in the gills (or hymenium) of the common mushroom. Fries, the great modern describer of fungi, defines the genus thus: hymenium formed of a peculiar substance, altogether distinct from the cap, entirely composed of tubes united into a porous layer; these tubes are undivided, separable from each other, long, cylindrical, or angular, open from end to end, and bear asci (spore-cases) on their inside; asci cylindrical, with small roundish spores; the stalk is central, and often netted; the cap is fleshy, soft, spread out into a hemispherical form; veil present in many of them. He includes within his definition but a small number of the old Boleti, referring the principal part to *Polyporus*, which is especially characterized by having the tubes of its hymenium inseparable from the cap, which is more leathery, and usually without a stalk.



[*Boletus lanatus*.]

The true Boleti are generally found growing on the ground in woods and meadows, especially in pine woods, the Polypori are commonly met with on trees, especially pollards. Of the former several species are eatable, as *B. edulis*, *subtomentosus*, and *granulatus*; others are acrid and dangerous. Of the Polypori, *subsquamosus*, *ovinus*, and several others are eatable, especially an Italian sort called *tuberaster*, which has a great reputation at Naples. *B. officinalis*, supposed to have been the *agarikon* of Dioscorides, is an old-fashioned medicine remarkable for the extreme acridity of its powder; it acts as a powerful purgative, but is never employed at the present day. *B. igniarius* when dried and sliced furnishes the German tinder, or amadou, a leathery substance sold in the tobacconists' shops. *B. destructor* is one of the many species of fungi the ravages of which are too well known under the name of dry rot; their destructive qualities are not however caused by the fructification, or the part which we commonly consider the fungus itself, but by the ramifications, through the substance of the wood, of what botanists call the *thallus* and gardeners the *spawn* of such plants, which is in effect their stem and root in a mixed state. The most dangerous of the dry rots is *MERULIUS LACHRYMANS*.

BOLE'TUS, MEDICAL USES OF. Several different species, all confounded under the name *B. igniarius*, furnished the means of stanching the flow of blood from wounds. They were supposed to do this by an astringent property, and, being erroneously referred to the genus *Agaricus*, were termed *agaric*, which word is often used as synonymous with *styptic*. Boletus possesses however no peculiar power of arresting the flow of blood, but acts mechanically like a sponge, and favours the formation of a clot. It is now almost entirely disused by British surgeons, but in some cases it merits a preference over other means of closing a bleeding vessel. When it is to be used, it must be rubbed firmly between the hands, doubled, and applied over the orifice whence the blood proceeds, and bound down by a compress. It should not be removed till after twenty-four hours, and the clot should be softened with *cold*, not warm water. Though the German tinder seems to offer a convenient substitute for the prepared agaric in case of an emergency, it would be very improper to employ it, as the nitrate of potash or saltpetre in which it is steeped would irritate and influence the edges of the wound. [AMADOU, vol. i. p. 410.] The German tinder however forms a very excellent moxa. The different kinds of boleti used as styptics were formerly designated *Agaricus chirurgorum*.

It is less on account of their uses than of their peculiar habitudes that the boleti merit our notice. In chemical composition, odour, and habitudes, they resemble animals more than vegetables. When cut into, some of them exhibit almost a muscular structure (*B. hepaticus*, or *Fistulina hepatica*), hence called by the French *langue de bœuf*. The *boletus igniarius*, when divided, has been stated by Professor Eaton to heal like a flesh-wound by the *first intention*, or complete re-union of its divided edges, scarcely exhibiting a cicatrix or trace of the injury. (Silliman's *Journal*, vol. vi. p. 177.) Nitrogen enters into their composition; and in regard to their relations with the atmosphere, they inhale oxygen, and exhale carbonic acid gas. The *boletus luridus* has been ascertained to abstract twelve per cent. of oxygen from the atmosphere in twelve hours. (*Inquiry into the Changes which the Atmosphere undergoes when in Contact with certain Vegetables which are destitute of Green Leaves*, by M. F. Marcet; Jameson's *Edin. New Phil. Journal*, October, 1835, p. 232.)

Boleti consist largely of *fungin*, with some boletic acid. Unlike most fungi, which grow rapidly and perish quickly, most of the boleti grow very slowly, acquire a firm texture, and last perhaps 100 years if not exposed to much moisture. According to Sir William Jones, the *B. igniarius* is found in India, and used in nearly the same manner as in Europe. (Ainslie's *Materia Medica Indica*, vol. i. p. 6.)

BOLEYN, ANNE, or, more properly, **BULLEN**, or **BULLEYNE**, was the daughter of Sir Thomas Bullen, afterwards created Viscount Rochford and Earl of Wiltshire. He was the representative of an antient line in Norfolk, which had in three descents been allied to the noblest families in England; and he had himself filled important offices in the state. Anne's mother was Lady Elizabeth Howard, daughter of the Duke of Norfolk.

Anne Bolesyn was born in the year 1607, and in her childhood accompanied Mary, the sister of Henry VIII., to

France, where she remained in the court of that queen and of her successor, the wife of Francis I., for many years. She was afterwards attached to the household of the Duchess of Alençon. The time of her return from France is doubtful, but Burnet places it in 1527, when her father was sent in an embassy to France. At that time she became a maid of honour to Queen Katharine, the wife of Henry VIII., and was receiving the addresses of Lord Percy, the eldest son of the Duke of Northumberland.

If the assertion of Henry VIII. is to be credited, he had long entertained scruples concerning the lawfulness of his marriage with his brother's widow; and had attributed to this violation of God's law the premature death of all his children by Katharine, excepting the Princess Mary. The most charitable and credulous however cannot abstain from remarking that the moment of his proceeding openly to annul the marriage was identical with the commencement of his addresses to Anne Boleyn, and that a similar coincidence marks the catastrophe of this unhappy woman. A letter from the king to her in 1528 alludes to his having been one whole year struck with the dart of love; and her engagement with Lord Percy was at this time broken off by the intervention of Wolsey, in whose household that nobleman was brought up. Anne retired into the country during the early part of Henry's process for the divorce, but she kept up a correspondence by letters with him. Some of the king's letters to her are still extant in the Library of the Vatican; they are in bad French, and were copied by direction of Bishop Burnet, and afterwards printed by his order. Burnet says that although not consistent with the delicacy of expression usual in these days, they show unquestionably that Anne Boleyn was the lover not the mistress of the king. In 1529 she returned to court, and was known to be intended by Henry for his future queen.

In the meantime the king's divorce from Katharine was retarded by various delays; and at the beginning of the year 1533 Henry married Anne Boleyn secretly, in the presence of her uncle, the Duke of Norfolk, and of her father and mother. Dr. Rowland Lee, afterwards bishop of Litchfield, performed the ceremony 'much about St. Paul's day,' which is probably the 25th of January, the feast of the conversion of St. Paul, or perhaps the 4th of January, another St. Paul's day. This date is established by a letter from Cranmer in the British Museum, quoted by Burnet, and printed in Ellis's *Letters*, first series, p. 34, and Cranmer's assertion is corroborated by that of Stow; although Hall, and after him Holinshed and Speed, mention St. Erkenwald's day, the preceding 14th of November. It was not until the 23rd of May following that the nullity of the king's previous marriage was declared by Cranmer, who five days afterwards confirmed that of Anne Boleyn; and on the 1st of June Queen Anne was crowned with great pomp. On the 13th of the following September the Princess Elizabeth was born.

Of the events of the queen's life during the two subsequent years little is known, except that she favoured the Reformation, and promoted the translation of the Bible. In January, 1536, she brought forth a dead child, and it was at that time and during her previous pregnancy that the affections of her husband were alienated from her, and fixed upon Jane Seymour, daughter of Sir John Seymour, and one of the maids of honour to the queen. Whether Henry believed the reports which Lady Rochford, her sister-in-law, spread concerning Anne it is needless to inquire; nor is it very important to know by what device a despotic monarch, who could count upon corrupt judges and a parliament of incredible servility, clothed with the forms of law the destruction of his victim. Queen Anne was accused of criminal intercourse with her brother, Viscount Rochford; the evidence to support the charge proved that he had leant on her bed. She was accused also of grossly criminal intercourse with Henry Norris, groom of the stole; Sir Francis Weston and William Brereton, gentlemen of the chamber; and Mark Smeton, a groom of the chamber. To support these charges something said by Lady Wingfield before her death was adduced, which amounted only to this, that the queen had told each of these persons that she loved him better than any person whatever. This was stretched into high treason, under the act of the 26th of Henry VIII., which made those who slandered the issue begotten between the king and Queen Anne guilty of that crime. The other evidence against her was Mark Smeton, who was never

confronted with her, but who was said to have confessed that he had three times known the queen. Two days after she was condemned to death Cranmer pronounced the nullity of her marriage, in consequence of certain lawful impediments confessed by her.

Of her conduct in the Tower an exact account may be derived from the letters of Sir William Kingston, the lieutenant, of which five, together with one from Edward Baynton, have been printed by Sir H. Ellis from the originals in the British Museum. From the day of her commitment she seems to have been certain of her fate; and she displayed by fits the anguish of despair and the levity which often accompanies it. 'For won owre,' says Kingston in a letter to Secretary Cromwell, 'she ys determined to dy, and the next owre much contrary to that.' To her aunt, the Lady Boleyn, she confessed that she had allowed somewhat too familiar approaches by her courtiers, but she never varied in her denial of any criminal act. On the 15th of May she was arraigned, together with her brother, before a special commission, of which her uncle, the Duke of Norfolk, was president. The sitting of this commission was secret, and the record of its proceedings must have been immediately destroyed; it is certain however that none of the ladies of her household were examined. The tradition of all contemporary writers agrees that the queen, unassisted by legal advisers, defended herself firmly and skilfully, notwithstanding the indecent impatience of the president; but, according to the practice of that and the three subsequent reigns, she was of course convicted. After her conviction her feelings seem to have been absorbed in indignation at the baseness of her persecutors, and anxiety for her own posthumous fame. There is in the British Museum the copy of a letter, unquestionably authentic, addressed by her to the king, which is written in such a strain of conscious innocence and of unbending and indignant reproof, that it sets her immeasurably above her oppressor. She tells him, 'Neither did I at any time so forget myself in my exaltation, or received queenship, but that I always looked for such an alteration as I now find; for the ground of my preferment being on no surer foundation than your Grace's fancy, the least alteration was fit and sufficient I know to draw that fancy to some other subject. . . . Try me, good king, but let me have a lawful trial; and let not my sworn enemies sit as my accusers and judges; yea let me receive an open trial, for my truth shall fear no open shames.'

Sir William Kingston, with the aid of his wife, and of the Lady Boleyn (the queen's aunt and known enemy), acted as a constant spy on her; reporting to Secretary Cromwell, for the king's information, all that escaped the prisoner's lips. On the 16th of May, Kingston writes impatiently to 'know the king's pleasure as shortly as may be, that we here may prepare for the same which is necessary for to do execution.' On the 18th he writes: 'and in the writing of this she sent for me, and at my coming she said, "Mr. Kingston, I hear say I shall not die afore noon, and I am very sorry therefore, for I thought to be dead by this time and past my pain." I told her it should be no pain, it was so subtle. And then she said, "I heard say the executioner was very good, and I have a little neck;" and put her hands about it, laughing heartily.' On the 19th of May she was executed on the green before the Tower, denying her guilt, but speaking charitably of the king, no doubt with a view to protect her daughter from his vengeance. 'Her body was thrown into a common chest of elm tree, used to put arrows in.' Lord Rochford, Norris, Weston, Brereton, and Smeton were also put to death.

A living historian sees something mysterious in the hatred exhibited by Henry to his queen. The mystery is sufficiently solved when we learn that the day after the queen's execution Henry married Jane Seymour; and he afterwards procured an act of parliament (28 Hen. VIII., c. 7) declaring his marriage with Anne void, and the issue of it and of his former marriage illegitimate.

If Anne Boleyn were only remarkable as the victim of the lusts, the caprice, and the heartless selfishness of Henry VIII. her history would be interesting, as an illustration of the state of our jurisprudence in her time, and of the temper of a king whose personal character exercised more influence over the affairs of England than that of any of our kings since the Conqueror. But the name of Anne Boleyn is still more remarkable by her connexion with the Reformation in England, of which she was the prime cause. Henry

VIII. could only obtain her hand by annulling his previous marriage; and the refusal of the pope to do this led to the severance of England from the Romish communion. Thus it is that the character of Anne Boleyn (a matter utterly beside the questions agitated between the Catholic and Protestant churches) has become a subject of fierce controversy which three centuries have not extinguished. Catholic writers strive elaborately to prove that, after a courtship of more than five years, her chastity did not repel the advances of Henry up to the very day of her marriage; while Protestants indignantly deny the charge, and appeal in her vindication to the dates of the principal events of her life.

Burnet, who has taken great pains with the subject, is the writer on whom we have principally relied. Stow, Hall, and the other historians who wrote in the time of Henry VIII. and of Queen Elizabeth, are cautiously meagre in their details.

BOLINGBROKE, HENRY ST. JOHN, VISCOUNT, was the son of Sir Henry St. John, Bart., afterwards Viscount St. John, of Battersea, where he was born October 1st, 1678. His mother was Mary, daughter of Robert Rich, Earl of Warwick. He was sent to school at Eton, from which he proceeded to Christ Church, Oxford; and on leaving the university he appears to have gone to travel on the Continent. He is supposed to have been abroad during the years 1698 and 1699, but all that is known of his travels is that he visited Milan. In 1700, soon after his return, he married Frances, daughter and one of the co-heiresses of Sir Henry Winchcomb, by which alliance he came into the possession of considerable property. His wife and he however could not agree, and they soon parted.

He had before this produced a few short poetical pieces of little merit; but he was chiefly known as one of the most dissipated among the young men of fashion of the day. He now however entered upon a new scene. He was returned to the parliament which met in February, 1701, for Wotton Bassett, a family borough, from which his father retired to make room for him. At this time the Tories, with Rochester and Godolphin at their head, were in power; and to this party, which was also dominant in the new House of Commons, St. John from the first attached himself. He appears indeed, even in this his first session, to have distinguished himself on various occasions as one of the most active and efficient members of their body. Their leader Harley, whom they had placed in the chair, and St. John were already intimate friends.

He sat also both in the next parliament, which met in December of the same year, the last called by King William, and in the first held by Queen Anne, which assembled in October, 1702. On Harley being made secretary of state in 1704, his friend St. John was brought into the ministry as secretary at war. This office he continued to hold for nearly four years, till February, 1708, when, upon the formation of a Whig administration under Marlborough and Godolphin (who had by this time changed their politics) he and Harley went out together.

He did not seek a place in the next parliament, which met in November, 1708; but, retiring to the country, withdrew altogether from politics, and gave himself up for two years to study. By the end of this period another complete revolution in the cabinet had taken place; and the dismissal of Godolphin in the beginning of August, 1710, had again elevated the Tories to power, with Harley at their head. In this new arrangement St. John was made one of the secretaries of state; and, a new parliament having been called, he was returned both for his old borough of Wotton Bassett and for the county of Berks, for which latter he elected to sit.

The biography of St. John for the next four years forms a principal part of the history of the memorable administration of which he was one of the leading members. That administration remained at the head of affairs till it was suddenly upset by the death of the queen in the beginning of August, 1714. During its tenure of power it had terminated by the peace of Utrecht (signed 11th April, 1713) the war with France, which had lasted since 1702; and this forms the great public act by which it has left the mark of its existence behind it upon the history both of these kingdoms and of Europe. In the negotiations by which this event was brought about St. John bore not only an eminent but the chief part. There is much reason for doubting however if the restoration of peace was the ultimate or prin-

cipal object of his zealous exertions. There is indeed strong ground for believing not only that both he and Harley, almost from their first entrance upon office, contemplated the restoration of the Stuart family to the throne, if circumstances should prove favourable for such an attempt, or if their own interests should appear to demand the measure, but that eventually St. John had actually committed himself to the cause of the Pretender. He had been called to the House of Lords by the title of Viscount Bolingbroke in July, 1712; and soon after this, from various causes, an estrangement and rivalry arose between him and his old friend Harley (now Earl of Oxford and lord treasurer), which broke out at last in an open contest for ascendancy. Principally, as it is understood, through the aid of Lady Masham, by whose influence with her royal mistress Harley had been placed in his present situation, but who in the end declared herself for Bolingbroke, the latter was enabled to effect the removal of his competitor on the 27th of July, 1714.

The death of the queen, however, which followed within a week, and the prompt and decisive measures taken at the instant by the friends of the House of Hanover, made Bolingbroke's triumph only that of a moment. After having been treated by the Lords Justices in a manner which sufficiently showed what he had to expect, he was on the 28th of August by the king's order dismissed from his post. He remained in the country for some time after this, and even appeared in parliament, and took an active part in debate, as if he had nothing to fear; but alarmed at length by the temper shown by the new House of Commons, which had commenced its sittings on the 17th of March, 1715, on the 25th of the same month he suddenly left London in disguise, and succeeded in making his escape to France. On the 9th of August following, by order of the Commons, he was impeached by Walpole at the bar of the House of Lords of high treason and other high crimes and misdemeanours, and having failed to surrender himself to take his trial, he was attainted by act of parliament on the 10th of September. In the meantime he had entered into the service of the Pretender, who appointed him his secretary of state, or prime minister, and by whom he was employed in the first instance to solicit the aid of the French government to the expedition then in preparation with the object of effecting a rising in favour of the exiled family in Great Britain. When the prince set out in person for Scotland at the end of the year, Bolingbroke was left in charge of his affairs in France. On his return, however, after an absence of about six weeks, the prince suddenly dismissed him from his employment, and soon after had him formally impeached before what he called his parliament for neglect of the duties of his office. Bolingbroke now endeavoured to make his peace with the court of St. James's, and a negotiation was opened with him by Lord Stair, the English ambassador in Paris, with the view of making arrangements for his pardon and restoration to his country, in consideration of the services he might now be able to render against the party and the cause by which he had just been flung off. It is probable however that more was expected of him in this way than he was disposed to engage for; at any rate the ministry eventually declined granting the pardon for the present.

He remained in exile for the next seven years, during which he kept up a correspondence with Swift, Pope, and other literary friends in England, and also drew around him a circle of new acquaintances comprising some of the most eminent men of the continent. He resided principally on a small property called La Source, near Orleans, which he had purchased in 1719, and which he had taken great delight in laying out and decorating. His wife having died in November, 1718, in May, 1720, he privately married the widow of the Marquis de Villette, a lady with whom he had lived for some time previously. She was a niece of Madame de Maintenon, and brought him a considerable fortune. It was to this lady's exertions and management that he was eventually indebted for liberty to return to his own country, which he obtained in May, 1723, principally it is understood through the intervention of the king's mistress, the Duchess of Kendal, whom Lady Bolingbroke bribed with a sum of eleven thousand pounds. Bolingbroke however, although he came over for a short time in June of this year, did not take up his residence in England till September, 1724. He now petitioned for the restoration of his property, and that also was granted to

him by an act of parliament, which received the royal assent on the 31st of May, 1725. The complete reversal of his attainder however, the operation of which still excluded him from the House of Lords, was steadily refused to all his solicitations. Upon finding the doors of parliament thus shut against him, he engaged in a course of active opposition to the ministry through the medium of the press; and his political papers, published first under the title of the 'Occasional Writer,' and afterwards continued in the 'Craftsman,' excited for some years much attention. It was in the 'Craftsman' that the series of papers from his pen originally appeared which were afterwards collected and published separately under the title of 'Letters upon the History of England, by Humphrey Oldcastle,' and also the subsequent series of letters forming his 'Dissertation upon Parties.'

While thus employed he resided at the villa of Dawley, near Uxbridge, which he had purchased on his return. Here he occupied himself not only in carrying on this political war, but also, as it afterwards appeared, in writing various treatises upon moral and metaphysical subjects which he did not send to the press. In January, 1735, however, he suddenly left England, and returned to France, with the resolution of spending the remainder of his life in that country. This step is supposed to have been connected with some political reasons, but what they were has never been satisfactorily explained. In this year, as appears from a note in Tindal's 'History of England,' there was published in London an octavo pamphlet containing a correspondence of some length which had taken place between Bolingbroke and the secretary of the Pretender immediately after his dismissal from the Pretender's service in 1716. The pamphlet was immediately suppressed, but Tindal has printed the letters at large; and their contents are such as it certainly could not have been agreeable to Bolingbroke to see laid before the public.

He remained in France, residing at a seat called Chantelou, in Touraine with the exception of a short visit which he paid to England to dispose of Dawley, till the death of his father in 1742. He now returned to take possession of the family estate at Battersea; where he resided for the most part till his death on the 15th of December, 1751. The year before, the death of his wife, by whom he had no family, had terminated a union which seems to the last to have been one of great happiness and strong affection on both sides. Most of his old friends also, both literary and political, among the number Pope, Swift, Gay, and Atterbury, were now gone. In politics he had almost ceased to take any active part for some years before his death; the fall of Walpole, in 1742, the event to which he had looked for so many years for his full restoration to the rights of citizenship, and probably his readmission to political power, having, when it came, brought no advantage either to himself or his party.

Bolingbroke bequeathed all his manuscripts, with liberty to print them, to David Mallet, the poet and Scotchman, who had gained his favour by consenting some years before to appear as the editor of his work, entitled 'The Idea of a Patriot King,' and to put his name to an advertisement prefixed to it, in which some very injurious and, in the circumstances, unbecoming reflections were made upon the conduct of his recently deceased friend-Pope, who, shortly before his death, had, without the knowledge of the author, got an impression of the work thrown off from the manuscript which had been lent to him. Mallet published the several treatises which had thus been left to him, along with all Bolingbroke's writings which had previously appeared, in 5 vols. 4to. in 1754. The first volume of this collection contains the 'Letter to Sir William Windham' (which had been first published in 1752 along with some other pieces); a short tract, entitled 'Reflections upon Exile' (dated 1716, and first published in English in 1752, at the end of the 'Letters on the Study and Use of History,' though part of it had, it is stated, been shortly before printed in French in a 'Monthly Mercury'); several short political papers, some originally published under the title of the 'Occasional Writer,' and others which had appeared in the 'Craftsman'; and the 'Remarks on the History of England,' in twenty-four letters (originally published in the 'Craftsman,' and afterwards published separately under the name of 'Humphrey Oldcastle,' with a dedication to Sir Robert Walpole, and a preface, which are here omitted, as having been 'written by another and a very inferior hand.') The con-

tents of the second volume are 'A Dissertation upon Parties' (in nineteen letters, originally published in the 'Craftsman,' and also afterwards printed separately); 'Eight Letters on the Study and Use of History' (dated 1735, and first published in 1752, in 2 vols. 8vo., although a portion of the work had been privately printed in the lifetime of the author); a 'Plan for a General History of Europe,' and a 'Letter to Lord Bathurst on the Use of Retirement and Study.' Volume third consists of 'A Letter on the Spirit of Patriotism' (dated 1736); 'The Idea of a Patriot King' (dated 1738); 'A Letter on the State of Parties at the Accession of George I.:' 'Some Reflections on the Present State of the Nation' (unfinished, dated 1749, and first published in 1752 along with the Letter to Windham); the 'Substance of some Letters (on moral and metaphysical subjects) written originally in French, about 1720, to M. de Pouilly;' and 'A Letter concerning the Nature, Extent, and Reality of Human Knowledge' (first published in 1752 along with the Letter to Windham), being the introduction to the series of letters or essays addressed to Alexander Pope, Esq. The fourth volume contains the second of these essays, entitled 'On the Folly and Presumption of Philosophers;' the third, 'On the Rise and Progress of Monotheism;' and the fourth, 'Concerning Authority in Matters of Religion.' The fifth volume is made up of fragments and minutes of essays, in continuation of the above. In 1798 there appeared in 2 vols. 4to. (sometimes designated the 6th and 7th volumes of Bolingbroke's works) and also in 4 vols. 8vo., 'A Collection of the Letters and Correspondence of Bolingbroke, Public and Private, during the time he was Secretary of State to Queen Anne, with Explanatory Notes, &c., by Gilbert Parke, of Wadham College, Oxford.' These letters and other papers had been secured when Bolingbroke took flight for France, by his undersecretary, Thomas Hare, Esq. afterwards Sir Thomas Hare, Bart., of Stow Hall, in Norfolk, where they had ever since been preserved, their existence having been little noticed or known. There also appeared at Paris in 1808, in 3 vols. 8vo., a collection of letters by Bolingbroke, in French, edited by General Grimoard, who has prefixed an historical essay on the life of the writer. This collection consists for the most part of letters written in French by Bolingbroke to Madame de Ferriol, between 1712 and 1736, and to the Abbé Alari, between 1718 and 1726. An octavo volume of letters, addressed by Bolingbroke to the Right Hon. William Pitt (the first Lord Chatham), is said to have been printed at Dublin in 1796, but we have not seen it.

Lord Bolingbroke's writings are now little read, and indeed, in matter at least, they contain very little for which they are worth reading. He had no accurate or profound knowledge of any kind, and his reasonings and reflections, though they have often a certain speciousness, have rarely much solidity. A violent partizan, and, we believe, a thoroughly unprincipled one, he has even in what he has written on the transactions of his own time, and on those in which he was himself concerned, only perplexed and obscured history; and this seems to have been his object. His most important performances of this kind, though they sometimes profess to have been prepared immediately after the events to which they relate, and although in one or two instances a very few copies of them may have been privately printed and confided to certain intimate friends, appear to have been carefully concealed by their author from the public so long as he himself lived to be called to account for what they contained, or any of the persons who could best have either refuted or confirmed them. As a mere rhetorician, however, Lord Bolingbroke has very considerable merit, and in this capacity he may even be allowed, though he added little if anything of much value to the general intelligence from his own stores, to have for the first time familiarized some important truths to the public mind. His style was a happy medium between that of the scholar and that of the man of society—or rather it was a happy combination of the best qualities of both, heightening the ease, freedom, fluency, and liveliness of elegant conversation with many of the deeper and richer tones of the eloquence of formal orations and of books. The example he thus set has probably produced a very considerable effect in moulding the style of popular writing since his time. The opposition of Bolingbroke's philosophical sentiments, as disclosed in those writings which appeared after his death, to revealed religion, is generally known, as well as the severe remark which the manner of their publication drew from Johnson—'Having loaded a blunderbuss

and pointed it against Christianity, he had not the courage to discharge it himself, but left half-a-crown to a hungry Scotchman to pull the trigger after his death.' It is now, we believe, admitted on all hands that Christianity has not found a very formidable opponent in Bolingbroke, and that his objections for the most part only betray his own half-learning. His objections, and the system which he would substitute in place of religion, are principally detailed in the third of his 'Letters on the Study of History,' and in his 'Essays' addressed to Pope.

BOLITO'PHAGUS, Fabricius (Entomology) *Eledona* of Latreille, Leach, and Millard, and *Opatrum* of some other authors: a genus of coleopterous insects of the section *Heteromeia* and family *Tenebrionidae*. The principal generic characters are as follows: head short, partially hidden by the thorax, in the males sometimes armed with a horn or tubercle; antennæ very short and thick, the three or four apical joints much broader than the rest; maxillary palpi rather large and distinct, the terminal joint truncated, its length equalling that of the two preceding joints; labial palpi small; thorax coarsely punctured or rugose, the lateral margins more or less toothed; elytra deeply striated; legs short and thick, the anterior tibiae compressed.

There are about six species of this genus known: they live in boleti, and are of a small size, a short ovate form, and their prevailing colours are brown-black. In this country but one species has as yet been discovered, *B. Agaricola* or *Agaricicola*. It is of a brown colour, and about one-twelfth of an inch long. It is rather local, but where it does occur it is found in tolerable abundance.

BOLIVAR, SIMON. In giving a sketch of the life of this celebrated man, the difficulty of selecting facts that have most probability can be appreciated only by those who have examined and collated the conflicting accounts of different partisans, which exhibit, on the one hand, the extravagant praises of friends, and on the other, the violence of personal and political enemies. The statements of the present article are derived from several works which, as they will occasionally be referred to, it will be convenient in the first place to name. The most important are, *The Annual Register*; *The American Annual Register*; *The North American Review*, especially vols. 19 and 21; *Historia de la Revolucion de la Republica de Colombia*, por Jose Manuel Restrepo, Paris, 1827: this work is dedicated to Bolivar, as the intimate friend of the author, who was secretary of the Colombian republic. *Outlines of the Revolution in Spanish America*, by a South American; *Memoirs of General Miller, in the Service of the Republic of Peru*, 2 vols., London, 1828; *Travels in Colombia*, by Captain Cochrane, 2 vols., London, 1828; *A Memoir of Bolivar in El Mensajero*, por el Rev. Jos. Blanco White, Londres, 1823; *Memoirs of Bolivar*, by General Ducoudray Holstein, 2 vols., London, 1830—a work in which the author's personal rancour is displayed by his misrepresentations. A similar caution is requisite in referring to *An Expedition to the Orinoco*, by Colonel Hipplesley, London, 1819; *Mémoires de Simon Bolivar* were published in Paris in 2 vols., in 1829, a sight of which we have not been able to obtain. The discrepancy of the various accounts in these works is occasionally very perplexing. Indeed Bolivar himself, as General Miller asserts, declared in 1824 that all the numerous accounts of him were very inaccurate. It is therefore necessary to premise, that, in some of the following particulars, especially the dates, it is not unlikely that inaccuracy may be discovered by persons whose information has been acquired on better authority than that of the inconsistent narratives hitherto published. It is much to be regretted that no impartial history of the South American war of independence has yet appeared.

Simon Bolivar was born in the city of Caracas, on the 24th, or, according to General Miller, the 25th of July, 1783. His father was Don Juan Vicente Bolivar y Ponte, a colonel in the militia of the vale of Aragua, his mother Doña Maria Concepcion Palacios y Sojo; both of very opulent families in Venezuela, of the rank of nobility called *Los Mantuanas*. He was sent, when about fourteen, to Madrid, for the completion of his education. By some of his biographers it is said that in his voyage he visited Mexico and Havana, places lying certainly somewhat out of the way of a ship's passage from Venezuela to Spain. After remaining several years in Madrid, and paying some attention to the study of jurisprudence, he made the tour of

Italy, Switzerland, Germany, England, and France; and after a long residence at Paris, devoting his time, as some assert, to the society of the learned, and a diligent attendance at all the scientific and literary lectures—according to others, revelling in all the licentiousness of the Palais Royal—he returned in 1802 to Madrid, and there married the daughter of Don Toro, uncle of the Marquis Toro of Caracas, or, as others say, the daughter of the Marquis de Ustoriz de Cro, his age being then only nineteen, and sixteen that of his wife, who is described as being remarkably beautiful and accomplished. In 1809 he returned to his native country, where, in company with the new captain-general of the colony, Don Emparan, he arrived March 24th at the port of La Guayra, and retired with his wife to domestic seclusion on one of his large patrimonial estates in the beautiful vale of Aragua near Caracas. The yellow fever, so prevalent in that climate, soon terminated his domestic happiness; for his wife, shortly after her arrival, fell ill and died. The natural intensity of his affections threw him into a state of frantic grief, which he sought to alleviate by returning to Europe. From Europe he proceeded to the United States, where he gathered some useful political knowledge, and about the beginning of 1810 again landed in Venezuela, in company with General Miranda, and retired to his estate of San Mateo.

It may be useful here to say a few words in explanation of the state of things immediately previous to the entrance of Bolivar upon his revolutionary career. The Spanish colonies of South America appear to have remained during a period of about 300 years in quiet submission to the arbitrary government of the mother country; that is, from the time of Columbus to the commencement of the present century, when the political principles developed first by the revolution of the Anglo-American colonies, and afterwards by that of France, began to be earnestly discussed by the patriots of the southern continent, who, in aggravated circumstances of oppression, far exceeded the point of suffering at which the North Americans had commenced resistance. Never indeed were despotism, avarice, and slavish obsequiousness to power so disgustingly shown in any country as in Spanish America, under the government of the viceroys and captains-general, who, with all the principal officers of the vice-royal court, and even the subordinate official clerks, were sent from Madrid, and without being, in reality, under any responsibility, revelled in every kind of tyranny and venality. Justice was bought and sold: the most important legal decisions were made in favour of the highest bidder. The mercantile policy of the parent country was equally despotic and rapacious; to preserve her monopoly of the wine trade, the culture of the vine in America, though very appropriate to the climate, was strictly prohibited: the establishment of manufactures was not permitted, while cargoes of commodities, the refuse of Spanish city shops, were forced, in barter for bullion, upon a half-civilized people who neither wanted nor could possibly use them; foreign commerce was interdicted on pain of death; all social improvement was suppressed; and to prevent them from knowing the greatness of their degradation, all intercourse whatever was strictly forbidden with any country or people besides Spain and Spaniards, and allowed even with them only under many restrictions. In short every species of wrong appears to have been inflicted, and above all was the domination of the priesthood, whose ranks were reinforced by recruits from the lowest and worst description of monks in the monasteries of Spain. By them superstition and ignorance were upheld as the surest support of the policy of the Spanish colonial system; so that before 1810, throughout the whole continent between Lima and Monte Video, there was but one crazy old printing-press, and that in the hands of the monks, who consigned to the dungeons of the Inquisition every possessor of a disallowed book. (*Quarterly Review*, vol. vii., and *North American Review*, vol. x.) It is stated that for some time previous to the first revolutionary movement in Venezuela a spirit of inquiry was aroused by a secret importation of the works of the French writers on religious toleration and democracy, the 'Rights of Man,' and similar productions; and that the danger of possessing them, occasioned by the violent denunciations of the priesthood, so strongly stimulated the desire to read them, that many individuals retired to seclusion in the country for that purpose. However, before 1810, the disposition to shake off the tyranny of Spain had already become sufficiently strong to occasion several desperate

attempts; but terror soon quelled these partial efforts, after those concerned were destroyed by the cruellest kinds of death. The first decisive movement of the revolutionists was made on a solemn Catholic festival, Maunday Thursday, the day preceding Good Friday, April 19, 1810, when the captain-general of Caracas was arrested and deposed, and a supreme junta or congress assembled to organize a new government for the state of Venezuela. (See in *Outline of the Revolution the Declaration of Independence.*) On the 20th of the following July or August, the same was done at Bogota, the capital of New Granada, which formed for itself a separate republican government; but it does not appear at all certain that Bolivar had any share in these first insurrections, though it is positively asserted in several accounts that he was one of the principal actors. On the contrary it seems to be evident that he at first regarded the project as impracticable; or, as some assert, he disapproved of the plans then adopted by the revolutionists, who still partially retained a veneration for 'the adorable Ferdinand,' for even after the establishment of the independent legislature at Caracas, he does not appear to have held any appointment, though importuned to do so by some of its members, especially by his cousin, Don Felix Ribas.

He accepted however soon afterwards the proposition to proceed to England, for the purpose of soliciting the British Cabinet to aid the cause of the independent party, and, with Don Luis Mendez, arrived in London in June, 1810. Finding that the English government professed to maintain a strict neutrality, Bolivar, who himself paid the expenses of the mission, after a short stay in England, left his companion, and returned in disgust to Caracas. Upon the appearance of Miranda as commander-in-chief of the patriot army in 1811, the declaration of independence was boldly maintained by military force: the tri-coloured flag was hoisted, and the Spanish standard cut down and destroyed. Bolivar was appointed colonel in the independent army, and governor of Puerto Cabello, the strongest fortress in Venezuela. The patriots were successful until the following year, 1812, when an earthquake destroyed, in the cities of Caracas, La Guayra, and Merida, about 20,000 persons; and as it happened on the very day and hour in which the revolution had broken out two years before, the clergy seized upon the accident to benefit, by a powerful effort, the cause of the royalists—representing the awful calamity as a just visitation upon the revolutionists. Priests, monks, and friars were stationed in the streets, vociferating in the midst of credulous multitudes trembling with fear, while the royalist troops under Monteverde were getting possession of the whole province. About 1200 royalist prisoners of war, who were confined in the fortress of Puerto Cabello, having shortly after broken loose, murdered some of the garrison, and by the treachery of the officer on guard, taken possession of the citadel, Bolivar, being unable to regain it by storm without destroying the town, embarked in the night, and on the 1st of July, 1812, returned by sea to his estate near Caracas. General Miranda, on learning at Vittoria that this very important place, with all its stores of ammunition and provisions, was deserted, capitulated in despair to Monteverde the royalist general, and prepared to leave the country, when he was unexpectedly arrested by a party of patriot leaders, of whom one was Bolivar himself; by him Miranda was accused of being a traitor and secretly allied with the British Cabinet, and being delivered with nine or ten hundred of his soldiers to Monteverde, was sent in irons to Spain, where he died in a dungeon. For this conduct Bolivar and his compatriots have been severely reproached with treachery and ingratitude. There were however many circumstances which appear to justify a suspicion of Miranda's collusion with the English Cabinet. He had been long resident in London, was patronized and paid by the English, was in constant intercourse with the English officers stationed at the neighbouring islands, and was about to depart in the vessel of an English captain. He had also made himself disliked by his contempt of the natives and preference of foreigners. Bolivar received from Monteverde, as an especial favour, a passport to Curaçoa, where, with his cousin Ribas, he remained during the autumn of 1812. Venezuela was now again entirely in the hands of the royalists, and deeds of revolting ferocity and plunder reduced the whole country to a frightful state of misery: on pretexts the most trivial, old men, women, and children were arrested, maimed, and massacred as rebels. According to General Holstein, friars and military butchers

reigned triumphant; and one of Monteverde's officers, Colonel Suasola, cut off the ears of a great number of patriots, and had them stuck in his soldiers' caps for cockades. It was now, on reflecting upon these atrocities, that Bolivar became a more enthusiastic convert to the patriot cause, and, with his cousin Ribas, proceeded from the island of Curaçoa to Cartagena, in order to raise a liberating army. There, by the influence of Manuel Torrices, the republican president of New Granada, about 300 men were fitted out, and Castillo, the president's cousin, having joined with 500 more, in January, 1813, Bolivar, as commander-in-chief, and Ribas as major-general, undertook to drive the Spanish royalists from Tenerife, on the river Magdalena. Having succeeded at Tenerife, he advanced in December to Mompox, in January, 1813, to Ocana, and in February to Cucutá, whence he expelled the Spanish commander Correa, and attracted great notice by surmounting every difficulty, dispersing the enemy, and gaining several hundred volunteers, provisions, and money. With this encouragement he planned an expedition for the relief of Venezuela, after first proceeding to Bogota, where the congress of New Granada received him well, and added largely to his means. By continual recruits from the towns through which he passed, his army increased to more than 2000, whom he marched along the Andes by Tunja and Pamplona, entered Venezuela, defeated the royalists at Grita, Merida, and various other places, and took possession of the whole province of Varinas. Castillo, who in slow and cautious formality was totally different from Bolivar, denounced as rashness and madness his precipitous decision, his rapid forced marches and daring expedients. He therefore separated and led away his troops to Tunja near Bogota: but the whole country rising and joining the ranks of Bolivar he was enabled to divide his army; Ribas led one division, himself the other, and both, by forced marches along different roads, advanced rapidly on Caracas. The revolutionary spirit was, previous to this time, confined to very few: but the almost incredible cruelties of the officers of Monteverde had driven thousands to desperation and revenge; and hence arose, on the part of the patriots, the manifesto of *guerra a muerte*, war to death. In justice to Bolivar, it is requisite to relate the circumstances which occasioned this dreadful expedient. A detachment under Colonel Brcena having been taken prisoners, Don Tiscar, the governor of Varinas, caused the Colonel, with sixteen of his companions and several patriot citizens, to be deliberately shot. This, in addition to numerous similar instances, and the report that the patriots showed mercy to prisoners and the royalists vengeance, by which the wavering and timid were induced to prefer enlisting against Bolivar, determined him to proclaim that 'the executioners who entitle themselves our enemies, have beheaded thousands of our brethren: our fathers, children, friends they have buried alive in the subterranean dungeons and vaults of our country: they have immolated the president and commandant of Popayan, with all their captive companions: they have perpetrated in Varinas a horrid butchery of our fellow-soldiers made prisoners of war, and of many peaceful citizens: these victims shall be avenged—the executioners shall be exterminated—our oppressors compel us to a mortal struggle—they shall disappear from America—the war shall be unto death!' The date of this manifesto is Merida, June 8th, 1813. It is said by General Holstein, that Bolivar himself never signed it. At Lostaguanes Monteverde was routed, and obliged to take refuge in Puerto Cabello; and on August 4th, 1813, the liberating army entered the city of Caracas, the capital of Venezuela. The joy of the people exceeded all bounds: it was certainly the most gratifying event in Bolivar's military career. Greeted by shouting thousands, artillery, bells, and music, the liberator was drawn into the city in a triumphal car by twelve beautiful young ladies of the first families of Caracas, dressed in white, and adorned with the patriot colours; while others crowned him with laurel, and strewed his way with flowers. All the prisons were thrown open, and hundreds came out pale and emaciated to thank him for their liberation. The royalists throughout the province capitulated, and the triumph was complete. Even General Holstein, the bitter enemy of Bolivar, says, in speaking of this event, 'he deserves great praise for his perseverance, and for the conception of such an undertaking, in which he sacrificed a considerable part of his fortune to furnish the troops with the means of following him.' Marino, who had recently raised an army in Cumana, and

from whom the royalist general escaped only by being caught in the arms and carried off upon the horse of a brawny Capuchin who was fighting at his side, had assumed the name of Dictator and Liberator of the Eastern provinces of Venezuela. The same title was adopted by Bolívar for those of the West. At this time he was in possession of unlimited power; but he did not prevent the prevalence of popular dissatisfaction, which the conduct of his officers had excited; and though on his entry into Caracas he proclaimed that no royalist should in any way be injured, still, an arbitrary and burdensome military government, necessary perhaps to correct the effects of previous anarchy, induced many to emigrate to the neighbouring islands for the sake of greater security. The legislative, executive, and judicial powers being united in the person of the dictator, occasioned great offence to the democratical party, and suspicions arose that the primary object of the liberator was his own aggrandisement. A consciousness of this opinion induced him, in the congress assembled at Caracas, Jan. 1, 1814, to declare, 'I have consented to accept and keep the supreme power to save you from anarchy: citizens, I am not the sovereign; your representatives will give you laws; the revenues of the government are not the property of those who govern. Judge now yourselves if I have sought to elevate myself; if I have not sacrificed my life to constitute you a nation: I desire that you will permit me to resign the office I hold: my only request is that you will leave me the honour of combating your enemies.' His retention of the dictatorial power was however agreed upon, for a great enthusiasm still prevailed in his favour, in consequence of the royalists beginning again to rally their forces and arm the negro slaves: a desperate expedient by which they were much assisted in raising a numerous army.

At Flores and other places the patriots were surprised, and all put to the sword. The royalist generals Boves, Rosette, and Morales, in committing the greatest cruelties, and destroying even women and children, appeared to emulate the ferocity of the first invaders. The first two, throughout a march of 400 miles, from the Orinoco to Cumare, with an army of slaves and vagabonds, murdered every individual who refused to join them; and General Puy, a negro assassin and robber, having on two occasions arrested and murdered many hundreds of the patriot inhabitants of Varinas, Bolívar, in revenge, and for the sake, it is said, of deterring the enemy from the repetition of such atrocities, ordered about 800 Spaniards in La Guayra and Caracas, to be arrested and shot, which accordingly, on the 14th February, 1814, was done, and immediately was retaliated by the royalists, who shot several hundreds of patriot prisoners in Puerto Cabello. This appears to be the only recorded instance of the patriot army's resorting to the savage expedient so continually practised by the royalist commanders; and afterwards, at Cumare, in July, 1816, it was formally proclaimed by Bolívar that 'no Spaniard shall be put to death except in battle: the war of death shall cease.' After several sanguinary conflicts, in which the patriots were victorious, Bolívar was beaten on the 14th of June, 1814, at La Puerta, between Cura and S. Juan Los Morros, where he lost 1500 men, in consequence of over-confidence, and the dividing of his army: again, on the 17th of August, at his estate of San Mateo, where 'the infernal division' of Boves, a legion of negro cavalry with black crapes on their lances, rushing with hideous shouts from an ambush, scattered his remaining forces, and, but for the fleetness of his horse, would have taken him prisoner. His cousin Ribas was seized and shot, and his head was stuck on the walls of Caracas. Bolívar's beautiful family-mansion was burnt to the ground, and he was ultimately compelled, in September, to leave the Spanish generals again in complete possession of all the provinces of Venezuela; when thousands of the patriot army deserted to their ranks. The two dictators, Bolívar and Marino, repaired as fugitives to Carthagena. They were received with great respect by the republican congress of New Granada, then assembled, in consequence of civil dissension, at Tunja; a small town about sixty miles north of Bogota. Bolívar was commissioned to compel the revolted province of Cundinamarca to join that republic. With 2000 men he marched, in December, 1814, upon the city of Bogota, which, after the outworks were stormed for two days, capitulated, and became the seat of congress. He was then employed to attack the fortified town of Santa Martha, which, in consequence of the imbecility of Labata, the

governor, had fallen into the hands of the royalists. But the governor of Carthagena, Colonel Castillo, who had formerly withdrawn from Bolívar's command, having refused to furnish some supplies, and after issuing defamatory manifestos, having poisoned the neighbouring wells, the troops of Bolívar, in resentment of this conduct, were engaged in reducing Carthagena; when, in April, 1815, in the midst of this unfortunate civil strife, which occasioned the greatest injury to the patriot cause, the arrival was suddenly announced of General Morillo from Spain, with an army of 12,000 Spaniards. The peace of 1814 with France had enabled the Spanish government to make a vigorous effort to regain the revolted colonies. Bolívar, disgusted with the calumnies and perverseness of Castillo, retired in May, 1815, to Jamaica, leaving Morillo to overrun the whole country. It appears that, being in despair of his country's ability at that moment to make any successful resistance, he determined to wait for a time more favourable. During his absence Morillo continued to ravage the two republics with fire and sword: at Bogota 500 inhabitants, and at Zimiti, a town sixty miles south of that city, 1500 were shot and hanged. While at Kingston in Jamaica, Bolívar employed himself in writing a defence of his conduct in the civil war of New Granada, and issued several spirited exhortations to the patriots, for which his assassination was attempted by the royalist party; and the Spaniard who undertook it for the reward of 50,000 dollars and perfect absolution, employed a negro who stabbed to the heart his secretary, who accidentally occupied the hammock in which he usually slept. The island of Hayti became his next asylum. By the president Petion he was supplied with four negro battalions, in addition to a body of several hundred patriot emigrants; and in May, 1816, was enabled, in conjunction with Brion, the commander of the republican naval forces, to land in the island of Margarita, where General Arismendi had again assembled the independent forces. With these various recruits, in July he appeared in Cumana, where he was suddenly surrounded by the royalists, and defeated with great slaughter at Cumare; after he had proclaimed the cessation of the war to death, and that no one should be injured for having deserted to the royalist ranks. He now took ship to the Dutch island Buen Ayre, and thence proceeded to Hayti. In the following December he re-appeared in Margarita, whence, having issued a proclamation convoking the patriots of Venezuela to a general congress, he sailed to Barcelona and collected a force sufficient to repel Morillo, then advancing upon him with a powerful army. A battle of three days ended in the defeat and disorderly flight of Morillo, who was surprised in retreating, and again defeated by the ferocious Llaneros of General Páez. Bolívar, being now again recognized as supreme chief and captain-general, fixed his headquarters, in 1817, at Angostura, on the Orinoco. With an army of 5000, half infantry, he marched thence to the westward, a distance of 600 miles in a month, to attack the fortress of Calabozo, where Morillo was collecting his forces. After numerous and obstinate battles, which are individually too unimportant to be named in the present outline, the republican party obtained a decided superiority; being greatly assisted by some foreign mercenary volunteers, of whom there were at this time in Venezuela about 3000 from Holland, Ireland, and England. On the 15th February, 1819, a solemn installation of the congress of the Venezuelan Republic was made at Angostura, which has also the name of San Tomé. The oration of Bolívar before the assembly was translated and published at the time in London, and may be found reprinted in the appendix to the memoirs of Gen. Miller; it is an excellent specimen of that impassioned and lofty eloquence in which his ardent temperament and enthusiastic imagination led him to indulge, and to which the stately phraseology of the Spanish language is so well adapted: indeed, much of the turgid extravagance of Bolívar's style, for which he is censured, is attributable to the idiom of his mother tongue, which abounds in hyperbole. However, his bad taste as a rhetorician is more than compensated by the philanthropy and good sense of most of his moral and political opinions; for instance, 'popular education ought to be the first concern of the congress; morals and knowledge are the cardinal points of republican prosperity, and morals and knowledge are what we most want.' The devoted earnestness in which, at all times, Bolívar urged the importance of moral and mental reform, can be appreciated only by reflecting upon the profligacy and barbarous

ignorance of his countrymen. The strange combination of democratic and monarchical principles must astonish every one who examines this exposition of Bolivar's theory of government, which on the one hand asserts the social equality and universal brotherhood of man, and on the other as solemnly and fervently advises the adoption of a government system, in which the sovereign power is centred in one presiding individual. This advice of course created much distrust of Bolivar's republican professions; but the moral condition of his countrymen, and the state of exasperated factions, may well be allowed to account for the recommendation of a 'strong government,' without resorting to the uncharitable imputation of tyrannical designs: for he asserts that 'inexorable necessity alone could have imposed upon me the terrible and dangerous charge of supreme chief: I feel to breathe again in returning to you this authority, which I have endeavoured to maintain in the midst of the most horrible troubles that can afflict a social body.' His authority as supreme chief, though resigned into the hands of the congress, was continued to him under the title of President, until the more violent commotions of society should subside, and the enemy be utterly expelled. In the same year he marched to the assistance of General Santander, in New Granada, and in July arrived at Tunja, which, after a daring and well-planned engagement on the neighbouring heights of the Andes, he took from the royalists; and, on the 7th of August, a decisive victory at Boyaca, in addition to several others, at once gave him possession of the whole of New Granada. Sanano, the viceroy reinstated by Morillo, precipitately fled; and Bolivar entered Bogota in triumph, amid the most joyful acclamations of the inhabitants, who hailed him as their liberator: the congress appointed him president and captain-general of that republic, and supplied him with men, money, and munitions, sufficient to ensure the complete expulsion of the Spanish troops. At Angostura, during his absence, the popularity of General Arismendi had gained him many adherents, and occasioned, in the Venezuelan congress, the formation of a party who encouraged suspicions of Bolivar's ultimate object. Intelligence of this dissension had no sooner reached Bogota, than Bolivar, apprehensive of the ruinous consequence of disunion, hurried away with 3000 chosen soldiers, and by his presence in Angostura immediately restored tranquillity. Those who desired a central system of government, for the sake of union and strength while the enemy still contended, made his entry into the city a magnificent triumph, and Arismendi was sent into exile. A general congress from the provinces of Venezuela and New Granada was summoned, and December 17, 1819, the decree was passed by which these two republics were united under the name of Colombia: the office of president was given of course to Bolivar.

In November, 1820, after numerous advantages gained by the liberating army, an armistice for six months was agreed upon; in negotiating which at Truxillo, it is said that Morillo twice passed the night in the same chamber with Bolivar. He appeared in fact to be weary of hopeless slaughter, and in January, 1821, returned worn out to Spain, leaving the command to General La Torre. Previous to his departure he said to Bolivar's deputies, 'My name will probably pass to posterity branded with cruelty and tyranny; but let it be remembered, that had I completely obeyed the orders of my government, this country would remain an uninhabited desert.' For a full description of the despotism and ferocity of the Spanish royalists, see the two first chapters of the Memoirs of Gen. Miller. On the 21st, or, according to others, the 24th or 26th of June, 1821, General La Torre was totally defeated by Bolivar at Carabobo, near the city of Valencia, when the royalists lost above 6000 men with all their artillery and baggage. It appears that Bolivar at first was far from being confident of the result, and that the victory was secured by the intrepidity of a body of English and Irish volunteers. This decisive battle concluded the war in Venezuela. The remnant of Spanish troops who escaped to the fortress of Puerto Cabello were compelled to surrender to General Paez. Bolivar the third time entered the city of Caracas in triumph, but the principal inhabitants having emigrated during the war, the streets presented a scene of desolation and misery, with groups only of ragged mendicants, who at once cried welcome and implored relief. A republican constitution was drawn up, and adopted on the 20th of August, 1821, leaving that its arrangements should continue until 1834. Colombia was now cleared of the royalist troops, except the

province of Quito, which was liberated by the great victory of General Sucre on the 24th of May, 1822, at Pichincha, one of the mountains of the Chimborazo overlooking the city of Quito. It was still deemed expedient, for the sake of security to the southern frontier of New Granada, to deprive the Spaniards of their possessions in Peru, and General San Martin, the founder of Peruvian independence, having solicited Bolivar to assist in the final struggle, he left the administration of government to the vice-president, General Santander, and putting himself at the head of the Colombian army at Popayan, marched to Pasto, thence to Guayaquil, where, on the 26th of July, 1822, he had an interview with San Martin, and thence embarked his troops for Callao. On the 1st of Sept. he entered Lima. The royalists on his approach evacuated the city: and the inhabitants, with every demonstration of delight, received him, and gave him the command of all the country's resources for the completion of its liberation. A republican constitution was adopted on the 13th of November, 1823, by a congress from the provinces of Northern, or Lower Peru, of which Lima is the capital. Bolivar, in the following December, marched from Lima with 5000 Colombians, to Pativilca and Huaras.

The congress, unable to govern, in February, 1824, dissolved itself, and appointed him dictator; 'an act,' says Gen. Miller, 'of unquestionable wisdom, when the country could be saved from party insurrection and the national enemy only by the energy and promptitude of military dictation.' An active dissentient faction at Lima declared that Colombia, in sending her army into Peru, had designs of territorial aggrandisement, and that Bolivar was actuated solely by sinister views of ambition. San Martin had been similarly taunted, and having said in his address of September 20th, 1822, 'I am disgusted with hearing that I wish to make myself a sovereign,' retired to Europe. The reply of Bolivar was, 'Your chiefs, your internal enemies, have calumniated Colombia, her brave men, and myself. The congress has confided to me the odious office of dictator; but I declare that after the enemy is vanquished, my authority shall cease—that you shall be governed by your own laws, and your own magistrates, and that, in returning with my fellow-soldiers to Colombia, I will leave to you perfect liberty, and not take away from Peru even a grain of her sand.' His army, consisting now of 6000 Colombians under Gen. Sucre, and 4000 Peruvians under Gen. Miller, advanced in July from Huaras towards Pasco. In a tedious passage of the Andes, the greatest hardships and dangers were endured, and by no one with greater fortitude than Bolivar: the cavalry having sometimes to stand throughout the night upon the snow-path of a precipice without any room to lie down or to turn, while the thermometer was several degrees below the freezing point. On the 2nd of August, Bolivar reviewed and harangued his army on the lofty table-land between Rancas and Pasco upon the margin of the Lake of Reyes, and on the 6th came in sight of the Spanish columns in a valley below, called the Plains of Junin. His cavalry, with their reins fastened on their knees, to enable them to wield with both hands their lances, fourteen feet in length, rushed down upon the royalists with such impetuous fury, that many who were struck were lifted two or three feet out of their saddles. After this victory the main army was left under Sucre and Miller; and Bolivar with a detachment proceeded to Lima; where, on the 22nd of December, he summoned a congress which re-organised the government, continued to the liberator the authority of dictator, and, in acknowledgment of his services, urged the acceptance of a million of dollars, which he refused, with the assurance that the honour of receiving their confidence was the only reward he desired. Before the senate, on the opening of this session of congress, he declared, 'I would that all Europe and America knew the horror I feel at irresponsible power, under what name soever it is exercised.' In the mean time the Generals Sucre and Miller, on the 9th of December, won the great victory of Ayacucho, when the royalists were defeated with irreparable loss of men and means. Thus ended the revolutionary war of the Spanish American colonies, in which, for the possession of national independence, at least 100,000 lives were sacrificed. On 10th February, 1825, the congress was again convoked by Bolivar, who resigned the dictatorship in the following words: 'I felicitate Peru on being delivered from that which, of all things on earth is most dreadful—war, by the victory of Ayacucho—and despotism, by this my resignation.' He set out in company with Generals Sucre and Miller, on the 10th of the following

April, to visit the provinces of Southern, or Upper Peru; and proceeded to Arequipa, Cuzco, La Paz, and Potosi. The whole expedition was one continued scene of triumph and extravagant exultation; of dinners, balls, bull-fights, illuminations, triumphal arches, and processions. A sumptuous banquet was given on the top of the far-famed Cerro of Potosi, and the liberator, in the enthusiasm excited by the excessive adulation he received, exclaimed on that occasion, 'The value of all the riches that are buried in the Andes beneath my feet is nothing compared to the glory of having borne the standard of independence from the sultry banks of the Orinoco, to fix it on the frozen peak of this mountain, whose wealth has excited the envy and astonishment of the world.' After a month of festivity at Potosi (see vol. ii. of Miller), Bolivar, with his military retinue, moved to Chuquisacoa, the capital of these provinces, which had recently become detached from the government of Buenos Ayres. A convention of representatives here vied with each other in rhetorical resolutions of gratitude to Bolivar and Sucre, whom they designated 'Grand Prince and Valiant Duke'; and having assumed for their country the name of Bolivia, they appointed Bolivar perpetual protector, and requested him to prepare for them a plan of government. A million of dollars were offered to him, which he accepted, on the condition that they should be appropriated to the purchase and liberation of 1000 negro slaves in Bolivia. In January, 1826, he returned to Lima, and on the 25th of the following May, the famous Bolivian code was presented to the congress of Bolivia. A transcript of the whole is given in the appendix of the Memoirs of General Miller, and various strictures upon it may be found in the American and English periodicals named at the head of this article. On the 22nd of June, the great congress of deputies from Colombia, Peru, Bolivia, Mexico, and Guatimala was convened at Panama. The idea of this 'Grand Amphictyonic Council' arose first in the mind of Bolivar, which often conceived projects too vast for his means of performance. The object in view was the annual assemblage of state representatives to discuss diplomatic affairs, and decide international disputes; promote liberal principles, and ensure an union of strength in repelling any foreign attack. In the first and only session a great profusion of eloquence was displayed to little purpose, in the philanthropic commendation of political liberality, religious toleration, and the abolition of slavery. The code of Bolivar was adopted in Bolivia, though not without partial dissatisfaction, on the 9th of December, 1826, the anniversary of the battle of Ayacucho, and General Sucre was appointed president. It was soon afterwards adopted by the congress of Lima, where Bolivar himself was made the president. The prominent principle of this constitution is the appointment of a president for life, with the privilege of naming his successor, and the assigning to him an irresponsible executive power; and yet this apparent institution of absolute monarchy is accompanied with a declaration of the necessity for a general and enlightened exercise of the elective privilege; asserting that 'no object is of more importance to a citizen than the election of his legislators, magistrates, judges, and pastors: none are excluded from being electors but those who are vicious, idle, and grossly ignorant; knowledge and honesty, not money, are what is required for the exercise of popular rights.' It should, in justice to Bolivar, be considered that the society over which he was called to preside, was breaking loose from a despotism of 300 years; and that the excessive ignorance of the great mass of the people required at first, in order to be restrained from anarchy and civil war, a government in which almost unlimited power should be centred in the president. It should also not be overlooked, that a clause of the code provided for its future alteration, when the progress of events should require it. But the suspicion of a people just liberated from arbitrary power imputed to its author the most unworthy designs of usurpation. Universal alarm was excited, especially as the large bodies of Colombian troops, though unemployed, were still retained in Peru, of which Bolivar now was absolute governor for life, in virtue of his own act, and in consequence, as it was said, of intrigue and intimidation.

In Colombia, his long absence had occasioned the prevalence of much disaffection and party strife. General Paez, who, with his numerous cavalry of wild Llaneros, had done much for the patriot cause, had excited in Venezuela

an insurrection in favour of a federal instead of the existing central government. Another portion of the republic was determined to adopt the code of Bolivia, so that two-thirds of Colombia were in a state of rebellion, that was daily increasing, and blood was beginning to flow. The presence of the liberator being thus demanded in the north, he departed from Lima, still leaving in Peru his Colombian forces, and proceeded rapidly to Bogota, where he assumed the extraordinary powers which are authorized by the constitution in cases of rebellion; but, at the same time, he proposed to reduce the army from 40,000 to 6000; to diminish the number of civil officers; to reduce the annual expenses from 14,000,000 dollars to 3,000,000, and to sell the ships of war. In a very impassioned address, he exclaimed, 'Colombians! I am among you—let the scandal of your violence, and the crime of your disunion cease at once. There is but one to blame—I am he—I have too long delayed my return.' All parties, however conflicting, desired the appearance of Bolivar. There was still a charm in his name, and he was thought to be the only man who could save the republic from ruin. Paez himself issued a proclamation from Valencia, calling upon the people to 'receive him as the thirsty earth receives the fertilizing dew of heaven.' In the end of December, the liberator arrived at Puerto Cabello, where he met General Paez: but instead of imposing any punishment for his rebellion, he confirmed him in his command in Venezuela, and issued a proclamation of amnesty to all the insurgents; a course of conduct that was readily taken to be a proof of his having himself instigated the insurrection, in order to furnish a pretext for assuming the power of dictator. An elaborate discussion of the particulars of this affair may be found in the 16th and 21st volumes of the 'North American Review.' It is said that Paez, in exciting insurrectionary tumults, was in deep collusion with Bolivar; that the introduction of a monarchy was anxiously intended, and that the lenity and even rewards of Bolivar constitute proof of the plot; but it is equally probable that the conduct of Bolivar was dictated by a prudent desire to conciliate the good will rather than to irritate the ferocity of a man whose great authority over hordes of savage Llaneros enabled him, as an enemy, to produce the greatest mischief. However this may be, on the presence of Bolivar all disposition to rebel immediately disappeared; and in February, 1827, he addressed to the senate a letter, in which he states that 'suspicions of tyrannous usurpation rest upon my name, and disturb the hearts of Colombians. Republicans, jealous of their liberties, regard me with a secret dread. I desire to free my fellow-countrymen from all inquietude, and therefore I renounce, again and again, the presidency of the republic, and entreat the congress to make me only a private citizen.' The discussion of this matter was prolonged by the collision of party opinions: in June it was finally decided by a majority of members not to accept the resignation, and Bolivar was consequently induced to retain his office. Still a very great mistrust of his assurances continued to prevail; and twenty-four members of the congress had voted for the acceptance of his resignation. In the meantime the Colombian troops in Peru being informed that Bolivar was making arrangements for the adoption of his code in Colombia, promoted a violent insurrection: for though it appears they were satisfied that Peru should adopt it, they would not permit its establishment in their own republic. The people of Peru being equally dissatisfied with their new institutions, on the 26th of January, 1827, a complete revolution ensued in the governments of Lima and Bolivia; so that the code of Bolivar was rejected only six weeks after its adoption. Another congress elected another president: the troops returned to Bolivar in Colombia, and after assurance of contrition their conduct was forgiven. Before a general assembly of Colombian representatives at Ocana, on the 2nd of March, 1828, an address was delivered by Bolivar, in which he insisted upon principles similar to those developed in his code; and attributed the unprosperous state of the republic to the deficiency of the executive power. His adherents, including the military, asserted with much appearance of truth, that the people were not prepared to appreciate the excellence of institutions purely republican; and that, for the sake of greater vigour and promptitude in the government, it was requisite to intrust to the president an absolute discretionary power. A majority disapproved of this opinion, especially the vice-president Santander, who declared the proposition of creating Bolivar dictator to be

'perfectly detestable.' The friends of Bolivar finding themselves in a minority vacated their seats, by which the meeting was left without a quorum, and thus became extinct.

In consequence of this event, a convention of the civil and military inhabitants of Bogota resolved to confer upon the liberator the title of Supreme Chief of Colombia, with absolute power to regulate the whole affairs of government. On the 20th of June, 1828, he accordingly entered that city in magnificent state, and assumed an authority which the contending for the inviolability of the constitution most daringly denounced. Shortly afterwards several assassins broke into his chamber, and two colonels were shot dead in the struggle, while Bolivar escaped only by leaping headlong in the dark from the balcony of the window, and lying concealed under a bridge. Santander, with several military officers who were convicted of having participated in the conspiracy, was condemned to death, but eventually suffered only banishment from Colombia. In 1829 the republic was disturbed by violent factions: many military leaders were aspiring to supreme command, and the efforts of Bolivar to prevent disunion excited insurrections. At the head of one was General Cordova, who declared that 'In despair at the conduct and aims of General Bolivar, who oppresses the whole republic, I place myself at the head of all true patriots and freemen to prostrate his ambitious views, and restore the lost liberties of the nation.' Another was headed by General Paez, protesting that, 'As I drove out the Spanish tyrants, so, with the same zeal and constancy, I will free Venezuela from the tyranny of Bolivar, the domestic despot, who has dared to attempt her slavery.' Venezuela became afterwards separated from the rest of the republic; Paez was made her president; and a declaration, signed by 486 leading men of Caracas, the scene of so many of Bolivar's splendid triumphs, denounced his ambition, and rejected his authority. Under these circumstances a general convention, in January, 1830, was held at Bogota, in order to frame a new constitution for Colombia. The proceedings were opened by Bolivar in a solemn address:—'I am taunted,' he said, 'with aspiring to tyranny; set me, I beseech you, beyond the reach of that censure: if you persist in electing me the state is ruined: give to another the presidency, which I now respectfully abdicate.' His resignation, as on former occasions, was not accepted; he was even entreated to retain his authority, and assured that, 'if you now abandon us, anarchy will succeed.' But he had finally determined to resign his station: he therefore at once took leave of public life, and retired to Carthagena, broken down and exhausted in mind and body. Joachim Mosquera had been some time before solicited by Bolivar to become the president; he now accepted the office; but after a few months he resigned, in despair of controlling the fierce contentions of the numerous aspirants to power. Bolivar, who had determined to take leave of his country and retire to Europe, was again importuned to come forward: but his health now rapidly declined.

In December, 1831, he sent to the people of Colombia a farewell address, in which he vindicates his conduct, and bitterly complains of calumny and ingratitude. 'Colombians,' he says, 'I have unceasingly and disinterestedly exerted my energies for your welfare; I have abandoned my fortune and my personal tranquillity in your cause: I am the victim of my persecutors, who have now conducted me to my grave—but I pardon them. Colombians! I leave you—my last prayers are offered up for the tranquillity of my country; and if my death will contribute to this desirable end, by a discontinuance of party feeling, I shall descend with feelings of contentment into the tomb that is soon to receive me.' A week after the writing of this address he expired at San Pedro, near Carthagena, on Friday the 17th of December, 1831, at the age of forty-eight. It is said that, in his last moments, he conformed to all the rites of the Catholic religion, that he manifested great calmness and resignation, and constantly showed the utmost anxiety for the prosperity of his country.

The reflection that the man who had devoted all his time, his fortune, and his life to the liberation and improvement of his country, had at last sunk beneath the weight of undeserved reproaches, and died broken-hearted, touched the callous hearts of his countrymen with a passionate grief and veneration, which, in every town of Colombia, was exhibited in orations and funeral processions. The 'United Service Journal,' in noticing this occurrence (vol. for 1831), says,

'This extraordinary man, it would now appear, was a disinterested patriot, and had consequently been basely requited by the country he had liberated. Since the event of his death, which occurred under circumstances very affecting, his merits as usual have been discovered by the rabble whom he served; and honours are paid to his memory, which, to his living person, were ungratefully denied.'

In reviewing the career of Bolivar, his never-ceasing apprehension of the dangers of anarchy will serve to account for much of his inclination to recommend the exercise of absolute power as a means to an end, which even his enemies allow to have been good. The question is, what was the object for which he desired the possession of power? It appears to have been the reduction of conflicting parties to a unity of purpose in establishing republican government. His denunciation of slavery, the liberation of all his patrimonial slaves, nearly a thousand in number, the sacrifice of the whole of his large fortune in the cause of independence, and the generous rewards he bestowed upon its defenders, as well as his liberal views on popular education, cannot leave a doubt of his ultimate object having been the political freedom and moral reformation of his country. It is common to make comparison between Bolivar and Washington; but, in justice to Bolivar, the great difference of circumstances ought to be regarded in forming an estimate of their comparative merits. The liberator of Colombia and Peru had almost every possible disadvantage: he received neither the powerful aid of French allies, nor the intellectual assistance of Jeffersons and Franklins: every thing depended upon his own vigour in the suggestion of means. Further, it is impossible to imagine two nations more completely dissimilar in physical and moral character than the Spanish and English colonies at the time of their respective revolutions. The Anglo-Americans, for the most part, were frugal and industrious, with a general equality of property and education; but the countrymen of Bolivar, one-half Spanish Creoles more or less mixed with the aboriginal race, the other half Indians, Africans, and intermediate colours, formed separate and conflicting castes, equal only in their ignorance and indolent habits—a few in possession of immense wealth, even 100,000*l.* a year, and thousands in a state of mendicancy and hunger. The army of Washington, independent of his foreign allies, was composed of local militia, each individual having a home and property more or less to return to: that of Bolivar often consisted chiefly of destitute adventurers, eager only for pay and plunder: ragged creoles, Indians, naked negroes, and cavalry of half-savage Llaneros and Guerrillas mounted on wild horses. The desertion of whole regiments first to one side, then to the other, according to the momentary chance of success, sufficiently shows their degraded moral condition. The generals, too, with whom his command was divided, were principally of the most uncivilized description: Arismendi could neither write nor read; Paez was a brutal mulatto bull-hunter, out of the deserts; and General Bermudez always took the field in a dirty blanket, with a hole in the centre for his head: while envy and fierce ambition were common to them all. The character and habits of such a people and of such an army greatly enhance the merit of the individual who conducts them from an abject state of oppression to independence and social improvement. The task undertaken and completed by Bolivar was the expulsion of Spanish authority, and the secure establishment of republican institutions; but it is doubtless in his character as a military commander rather than as a statesman that his excellence consists. In enterprising promptitude and enthusiasm he differed greatly from Washington, and, on that account, was better qualified to succeed under circumstances essentially different from those in which the North American general was placed. His invincible perseverance in spite of every discouragement and disaster, his ingenuity in devising expedients and raising resources for war, his skill in impressing upon wavering minds a confidence in the final result; the firmness with which he controlled the spirit of faction, and kept together conflicting interests until the termination of the struggle, entitle him to the reputation of a great man. His passive virtues were remarkably great: in the endurance of fatigue, in marches often of more than a thousand miles, both in the torrid heat and desert wilds of the Llanos, and over the frozen summits of the Andes, in hardships and dangers of every description, his fortitude for nearly twenty years is worthy of the highest admiration. Of the sincerity of his pa-

lytimate it is unnecessary to doubt. His generosity to the Government of his country was unfounded. An instance may be given from the letter which he wrote to the celebrated Joseph Lancaster, who visited Colombia for the purpose of introducing his system of elementary instruction. It is preserved in the 25th volume of the *Revue Européenne*, volume dated June, March, 1825, and addressed to the Minister of Caracas. After giving an order for 75,000 dollars, and promising to promote the appropriation of a million more, besides a large contribution of his own for the purpose of maintaining schools, the liberator concludes with 'Reserve the expression of my admiration, respect, and gratitude, for coming to my country to bring to my young nation the benefits of elementary education.' The 40th volume of the same work may be consulted for an exposition of the progress of social and mental improvement in Colombia during the first five years of the republican government. According to General Holston, the educational power is still predominantly the clergy being its most members of the senate, officers in the army, and parish priests. It is therefore not surprising to find in the new constitution adopted in the year of Bolívar's death, the declaration that 'none but the Catholic religion shall be tolerated.' For those who desire to read the history of Bolívar's campaigns, the map of Colombia in the work of Captain Cochrane may be treated as useful for reference. A fine portrait of Bolívar was published in Paris in 1830, by Malm, price five francs. There is also an excellent one in the 'The Library of Portraits of the Society for the Diffusion of Useful Knowledge.'

The expression of Bolívar's features was that of unvarying vigour, and the great activity of his labours had given him at the age of forty-five, the appearance of sixty. In height he was five feet five inches; his complexion dark, and approaching to olive; his hair black and stiff like that of the American Indians, but inclined to curl; and his eyes, when animated in conversation, remarkably vivid and bright. He was capable of enduring great fatigue, was a remarkably bold horseman, and excessively fond of dancing in his leisure hours. He subsisted in the most unrefined style, but was himself extremely abstemious. 'He particularly eschewed,' says General Miller, 'in drinking elegant and appropriate extensive repasts. On one occasion he delivered seventeen imprudential answers in succession, each of which if pursued on as he spoke it would have been destined for its peculiar adaptation to the case, and, by proposing a toast, by returning thanks, or by speaking unreservedly upon any given subject, General Bolívar was probably never surpassed.'

BOLIVIA is the name adopted by one of the new countries which have lately been formed in South America. It was originally called Upper Peru, and formed a portion of the territory of Huancá Pizarra in de la Plata; but being separated from the more populous parts of those provinces by the desert of Ghama, and a very rugged and dreary mountainous region, it was not likely that it could remain united to that State after the subversion of the Spanish authority. The republic of Bolivia dates from the battle of Ayacucho, Dec. 9, 1824, in which the republicans under Sucre completely defeated the royalists. The patriots adopted for their new republic the name of Bolivia, in honour of General Bolívar.

The most northern angle of Bolivia is the peninsula formed by the confluence of the rivers Beni and Mamora, in about 9° 50' lat. from which point the united river is called Madaya. The most southern point is on the shores of the Pacific at the Bahía de Nuestra Señora, between Punta del Norte and Punta del Sur, about 23° 8' lat. It consequently extends over 16° of lat. or upwards of a thousand miles, from north to south. The most eastern part is contiguous to the river Paraguay, where after leaving Brazil it forms for some space the boundary between Bolivia and Paraguay, and extends in 37° 39' W. long. The most eastern portion of the republic borders on the Coast of Paria del Norte, about 70° 30' W. long. Under the parallel of 9° the extent of the country from east to west may be about 550 miles, but towards the north it is less. The mean width may be about 300 miles, and the mean breadth 100, which gives a surface of 750,000 square miles, or about three times the extent of the British Islands.

Bolivia is bounded on the west for about 200 miles by the Pacific Ocean; the remainder of its western and north-

western frontier is formed by the republic of Peru. It borders on the northwest and east on the empire of Brazil, except the most south-eastern corner, where it joins Paraguay. To the south of it extends the republic of Huancá Pizarra, and where it approaches the Pacific, that of Chili.

As nearly the whole of this country is situated within the tropics, it might be expected that its climate and productions would correspond to its geographical situation; but perhaps not more than one-half of its surface has a tropical climate. The other half is occupied by high mountain ranges, table lands of great elevation, high valleys, and woody extending slopes. The mountainous portion of Bolivia belongs to the great range of the Andes.

Where the Andes continue from south to north enter Bolivia they send off at about 24° N. lat. a lateral branch to the east, which extends to a great distance, and separates the affluents of the Rio Bermejo from those of the Paruro, both of which fall into the Paraguay on its right bank. This lateral mountain-range, which constitutes the southern boundary of Bolivia and separates it from Buenos Ayres, is very little known; it does not seem to rise to a very great height, but is extremely rugged and barren. The principal chain of the Andes here runs nearly north and north, and is likewise little known, but contains some peaks which rise above the snow line. The Nevado de Chumburazo (21° 30' S. lat.) is said by rise to be 16,440 feet, but is probably higher. Up to this mountain the Andes seem to form a single and undivided range from the southern extremity of Chili; but to the north of it at about 20° there is an extensive mountain-range, called the Cordillera de los Lpez (12° 30' S. lat.); the mountains divide into two great longitudinal ridges, which run parallel to one another and bound an immense intervalle valley or table-land, called the valley of Desaguadero, which includes the great lake of Titicaca. The western ridge, called the Western Cordillera, continues, as far as it lies within the boundaries of Bolivia, a due northern course, and contains near the boundary-line several snow-capped peaks, of which the highest, called Gualarini, rises to 22,000 feet. To the north of these peaks, but within the limits of Peru, the range declines some degrees to the west, running parallel to the coast, and here other snow mountains occur. [Pagan.]

The eastern ridge, called the Eastern Cordillera or Cordillera Real, separates from the mountain-line north of Paria (19° 50'), and of Potosi (12° 35'). The mountainous mountains which surround Potosi may be considered as extending its southern extremity, and the celebrated mountain of Cerro of Potosi also belongs to it. From this point the cordillera runs north, inclining a little to the west, to the Nevado de Illimani (10° 46'). Between Potosi and this summit no part of the range attains an elevation of 17,000 feet, none being enveloped in snow during the entire year, but this elevation constitutes, according to the opinion of Perland, the inferior limit of perpetual snow in the junction of the Andes. The Illimani forms a serrated ridge with four peaks rising to the height of 23,000 feet, or 7000 above the snow line. At this point the range somewhat changes its direction, continuing nearly due north-west, and forming an almost continuous line of snowy mountains till it joins the ridge called the Andes of San Juan del Oro out of Yllimani, which between 14° and 13° extend nearly east and west, and again connect the two ranges of the Andes. In this portion of the Eastern Cordillera in lat. 16° 10' is the Nevado de Surata, the highest peak of the Andes, rising to 23,220 feet, consequently 3814 feet higher than Chumburazo (21,406 feet according to Humboldt) and only inferior to a few peaks of the Himalaya Mountains.

Both chains of mountains, with the intermediate valley of the Desaguadero, occupy a breadth of upwards of 230 miles to the north of 15°, but to the south of that parallel they are upwards of 300 miles in width. The length of this mountain mass is about 420 miles, and it consequently covers a surface of upwards of 100,000 square miles, of which however nearly one-fourth belongs to the republic of Peru.

It is remarkable that the summits of the Western Cordillera either present the form of a truncated cone, or of a dome, and that about them are numerous indications of their having once been volcanoes, and some of them still eject ashes; the higher parts of the Eastern Cordillera are either pointed peaks or notched ridges, and no volcanic products are found near them.

The ridge of the Desaguadero, which lies between the two ranges, with a mean elevation above the sea estimated

a. 13,000 feet, runs in its southern portion nearly parallel to the meridian, but north of lat. 17° it forms an angle of almost 35° with that line, running very nearly north-west-by-north, and south-east-by-south. Not having any outlet towards the sea, the rivers which descend into it are either lost in the sandy soil, or empty themselves into the lake of Titicaca at its northern extremity. This lake, the largest in the South American continent, occupies an area of about 4600 square miles, and its surface is 12,795 feet above that of the Pacific. In some places its depth has been ascertained to be 120 fathoms, but many parts are probably much deeper. This lake receives numerous streams at its northern extremity, but not all the waters which descend from the sides of the mountain-ridges. It is remarkable that the watershed on the eastern part of the valley of the Desaguadero, and as it would seem also on the western, is not formed by the high ranges, but by two low lateral ridges distant from twenty to thirty miles from the lake, and generally rising from 500 to 1000 feet above its level. The waters collected between these lateral ridges and the high mountain-ranges descend eastward to the plains traversed by the river Madeira and its upper branches; and westward towards the sea. The only outlet of the lake of Titicaca is the river Desaguadero, which issues from its south-western extremity in lat. $16^{\circ} 38' 10''$, and is a small stream when compared with the immense extent of the lake. Its depth however is considerable, but its velocity is scarcely two miles an hour. It runs southward, and forms near 19° a lake, called Lago del Desaguadero, in which it is lost. Its course between both lakes may be 180 miles.

The lake of Titicaca contains numerous small islands which rise directly from the water's edge to a considerable height. That from which it has taken its name, and which is known in the history of the ancient Peruvians as the place where Manco Capac made his appearance, is situated at the south-east extremity. Both the southern part of this lake, which bears the name of Laguna de Umamarea, and the eastern shores, nearly in their whole extent, belong to Bolivia.

The climate of the valley of the Desaguadero offers many peculiarities. Being in its lowest parts upwards of 13,000 feet above the level of the sea, the heat is never great, nor is the cold very sensible, except during the night from May to November. This season, which is the winter, is extremely dry, the sky is cloudless, and neither rain nor snow is known to fall. But snow precedes and follows the rainy season, which in this valley begins at the end of November, and continues through the summer months to the beginning of April. During these months it rains nearly every day, more or less; but during the night the sky is clear, and no clouds are observed: snow falls only in November and April.

The vegetation of this valley has also a very peculiar character. There are no trees, but the lower districts, especially near the great lake, are covered with the most beautiful green turf where the land is not cultivated. The cultivation is limited to a few things; wheat, rye, and barley are indeed sown, but they do not ripen, and are cut green as fodder for the llamas. The plantations of quinoa (*Chenopodium quinoa*, Linn.) are extensive, and also of potatoes, which are found growing wild in some more elevated places; these plantations extend to a considerable distance up the sides of the adjacent hills. There are no peculiar seasons for sowing or harvest, and the natives are continually occupied either in performing the one or the other operation. The country which extends between the ridges of hills and the high ranges contains for the most part undulating plains, covered with a coarse grass, on which numerous herds of llamas are fed. Here also the guanacos, alpacas, and vicuñas feed in a wild state. Besides these no wild animals have been observed in the valley of the Desaguadero, except a peculiar kind of hare, described by Mr. Bennet under the name of *Lagotis Cuvieri* in the first volume of the 'Transactions of the Zoological Society'; and a small animal of the family *Rodentia*, which in some places has so burrowed the soil as to render travelling on horse-back unsafe. The numerous birds which visit the lake of Titicaca, and the fish, have not yet been described, nor even enumerated. The condor is frequently met with on the mountains. Among the spontaneous plants the rushes which grow along the banks of the lake deserve to be noticed, as the entire want of trees has compelled the natives to apply them to nearly as many uses as the bamboo is employed in India. With these rushes the natives build their huts, and make the

boats and sails with which they navigate the lake: mats made of them are the bed of the poor, and serve in the houses of the rich as carpets.

From this valley six mountain-passes traverse the western Cordillera to the Pacific Ocean. Their highest points rise to nearly 15,000 feet above the sea, and consequently they are not inferior to the mountain-passes of the Himalaya in elevation. The ascent to these passes from the valley is only 2000 feet, and the slope is gentle; but the descent to the sea is exceedingly rapid. The highest point of the great range being close on the maritime declivity of the Cordillera, and consequently at an inconsiderable distance, not exceeding sixty miles, from the sea, the descent must be extremely precipitate and abrupt. A traveller coming from the coast finds himself transported in a few hours from the valleys on the Pacific to the arid regions of the Cordillera, at an elevation exceeding 15,000 feet.

That portion of Bolivia which extends between the Andes and the Pacific, in length upward of 250 miles between the Bahía de Nuestra Señora and the small river Loa, does not differ much from the coast which extends northward to Guayaquil in Columbia, and southward to Coquimbo in Chile. All this coast, which is nearly 1800 miles in length, with a breadth varying from thirty to sixty miles, may be considered as a line of sandy deserts. It presents great undulations of surface, and were it not for the stupendous back-ground, which reduces every other object to a comparatively diminutive size, the sand hills might sometimes be called mountains. This long line of deserts is intersected by rivers and streams, which are seldom less than twenty, nor more than eighty or ninety miles apart. Along them are found the only places which are inhabited; and the narrow strips on each bank of every stream are peopled in proportion to the supply of water. During the rainy season in the interior the rivers swell prodigiously, and can only be crossed by a balsa, which is a raft of frame-work fastened upon four bull-hides sewed up, made air-tight, and filled with wind. A few of the large rivers reach the sea, but most of those of the second order are consumed in irrigating the cultivated patches, or are absorbed by the desert, where neither birds, beasts, nor reptiles are ever seen, and where a blade of vegetation never grows. Sometimes the banks of the rivers are too steep and rugged to admit of the water being applied to the purposes of irrigation, and consequently the surrounding country cannot be cultivated. No traveller can go from valley to valley without a guide, for there are no marks to guide his steps. The sand is frequently raised into immense clouds by the wind, to the great annoyance of the traveller, who generally rides with his face muffled up.

That portion of this coast called Atacama, which belongs to Bolivia, is by far the worst. But the greatest part of Bolivia is situated to the east of the Andes, and this portion may be divided into the mountainous district and the plains. The mountain-district extends along the eastern side of the Andes, and is not of great extent to the north of $17^{\circ} 40'$, because the slope of the Eastern Cordillera towards the plains is nearly as rapid as that of the Western towards the sea, and the branches which this chain sends off extend to no great distance from the principal range. But at about $17^{\circ} 10'$ S. lat., a mountain-range detaches itself from the Eastern Cordillera, which runs generally due east for upwards of 200 miles. This branch rises near the city of Cochabamba, above the line of perpetual snow, in the pointed peak called Nevado de Tinaira; farther eastward it gradually declines till it terminates on or near the banks of the Rio Guapiá or Grande, at no great distance west of the town of Santa Cruz de la Sierra. This chain is commonly called the Sierra of Santa Cruz. Between this ridge and that forming the boundary line towards Buenos Ayres, which we have already noticed, extends the mountainous portion of Eastern Bolivia. Its western boundary may be fixed at about 63° W. long. This country is traversed by many lateral ridges, which are offsets from the great chain of the Andes, and form extensive valleys. Many of these valleys sink slowly, and often maintain themselves for a considerable extent at nearly the same elevation. This circumstance, as well as the width of the valleys, renders them particularly fit for agriculture, and for the cultivation of tropical as well as extra-tropical productions. Many persons have considered these valleys as the most fertile, and the most beautiful parts of South America. Here the slopes of the mountains are generally covered with fine

trees to a great height. This description however applies only to the northern part, between $17^{\circ} 30'$ and 20° . Farther south the valleys are narrower, and the ranges which enclose them without wood, and nearly without vegetation: with the exception of a few valleys, the only pasture for llamas and guanaco.

No part of America has a greater abundance of water than this region. The rivers which descend from the eastern declivities are very numerous and contain a volume of water which cannot be exhausted by irrigation. These rivers may be considered as the true sources of the Amazon and La Plata rivers, being at a greater distance from the mouths of these rivers than any other streams. This is certainly true, as far as regards the Amazon; for the Cordillera Real contains the sources of the greatest of its tributaries, of the Rio Madeira. This large river is formed by the junction of two considerable streams, the Rio Beni and the Rio Mamore, both of which descend from the Cordillera Real and unite their waters between 10° and 11° S. lat. The upper branches of the Rio Beni are the Rio Caca, the Rio Chuqueapo, and the Rio Quetoto. The Rio Quetoto, the most southern of them, rises where the Sierra de Santa Cruz detaches itself from the eastern Cordillera, and taking a N. E. and N. course enters the plain, where it soon meets the Chuqueapo, which has its origin in the valley of the Desaguadero to the north-west of the Nevado de Illimani. The Chuqueapo, which is only prevented by a low ridge from entering that river, after having passed the town of La Paz, traverses the great chain ($16^{\circ} 55'$) through an enormous chasm. It then runs for nearly a hundred miles through a fine valley and joins the Quetoto on entering the plain. After this junction the river continues its northern course, dividing the mountainous country from the eastern plains till it meets the Rio Caca. The Caca, under the name of Mapiri, rises likewise in the valley of the Desaguadero, at no great distance from the Nevado de Sorata towards the west, and running first north and then east, traverses by a deep chasm, the Cordillera Real north of the Nevado de Yani, a high snow-capped peak. During a very tortuous course the Mapiri is joined by a great number of streams which descend from the eastern declivity of the same Cordillera, and by their union the Rio Caca is formed. This stream joins the united rivers Quetoto and Chuqueapo about $13^{\circ} 30'$, and the river formed by their junction is called Beni, which name it preserves in its northern and north-northern course to its junction with the Mamore. Thus the Beni brings to the Madeira all the waters from the eastern and from a portion of the western declivities of the Cordillera Real, as well as a portion of those from the Sierra de Santa Cruz.

The other great branch of the Madeira, the Mamore, rises under the name of Cochabamba in the western extremity of the valley which bears the same name, and is distinguished by its cultivation and its numerous products. It first runs E. by S. and afterwards due E., when being swelled by many small rivers, it assumes the name of Rio Grande. It afterwards makes a very large semicircular sweep, by which it arrives at the town of Santa Cruz de la Sierra, whence it runs N. W., and after uniting with the Chaparé at about $16^{\circ} 30'$ receives the name of Mamore, and by degrees changes its N. W. course into a N. one. The Chaparé is formed by four or five streams descending from the northern declivity of the Sierra de Santa Cruz. Before the Mamore unites with the Itanez, a large river which rises in the western parts of Brazil, it receives the waters of the Yacuma, whose source is at no great distance from the banks of the Rio Beni, and which runs through an extremely flat country. The Itanez [BRAZIL] is increased before its junction with the Mamore by the river Ubahy, which rises in a lake called Laguna Grande, in the country of the Chiquitos, and is therefore also called Rio de Chiquitos. It is said to run nearly parallel to the Mamore, but at a considerable distance from it; but as this part of Bolivia is very little known, we have no certain information about it. After the junction of the Mamore with the Itanez, the river continues its northern course till it meets the Beni at the most northern angle of Bolivia, from which point the river has the name of Madeira.

The waters which descend from the eastern declivity of the Andes south of 18° S. lat. go to the Pilcomayo, one of the principal branches of the La Plata river. The Pilcomayo rises at nearly the same distance from the Pacific as

the Parana, the other great branch of the La Plata from the Atlantic Ocean: this distance hardly exceeds sixty or seventy miles. Both these great rivers also rise nearly in the same parallel between 20° and 21° ; their sources are 25° of long. distant from each other, or upwards of 1000 miles.

The Pilcomayo rises on the southern declivity of the mountain-knot called Cordillera de los Lipez, and running generally due east, is soon increased by numerous other streams, some of which are considerable, as the S. Juan, which rises about $22^{\circ} 30'$, and falls into the Pilcomayo from the south; the Paspaya, which rises in the neighbourhood of Potosi on the southern declivity of the eastern Cordillera and soon becomes navigable; and the Cachymayo, which rises not far from the source of the Cochabamba, and traverses the beautiful and well-cultivated valley of Chuquisaca. Soon after the junction with the Cachymayo, the Pilcomayo, continuing its eastern course, forms for about 100 miles the boundary-line between Bolivia and Buenos Ayres, when turning suddenly to the south it enters the desert called Grande Chaco, and leaves the territories of Bolivia.

The whole eastern portion of Bolivia, from the banks of the Pilcomayo and the frontier of Buenos Ayres to the junction of the Mamore and Beni, is one extensive plain, which from east to west extends about 200 miles, and from south-east to north-west upwards of 700. A few isolated ranges of hills rise in some parts, but neither their place nor their height has been determined with any degree of accuracy. In the southern part of this plain lies the watershed between the affluents of the Amazon river and those of the La Plata, but as far as our information goes it does not appear to rise to any great height above the sea. This plain is principally watered by the Beni, the Mamore, and the Ubahy, which in the rainy season, from October to April, inundate the country along their banks to a considerable extent. In many places there are lakes, and though none of them are very large, the exhalations, united with those from the inundations, render the climate excessively humid. This humidity, added to the heat which prevails all the year round, gives rise to many dangerous diseases, and renders this plain very unhealthy, especially for Europeans. This part of the republic has consequently been almost abandoned by the Creoles, though its great fertility would better repay the labour of the cultivator than any other district of the country. Immense forests of high trees cover nearly the whole of these plains, but their valuable products are entirely neglected, except that a considerable quantity of cocoa is gathered by the natives and brought to the towns of San Lorenzo de la Frontera, La Paz, and Cochabamba. The plantations consist commonly of mandioca and maize, those of cotton and rice being rare; all the other tropical productions which might be cultivated with the greatest advantage are almost entirely neglected.

Where the borders of Bolivia, Brazil, and Paraguay meet, the Lake of Xarages extends along both banks of the river Paraguay, and their lake has repeatedly disappeared and reappeared on our maps. As far as it is known, there seems to be in this part of South America an extensive depression of the surface, which being traversed by a large river subject to a considerable annual increase of water, is by turns inundated and drained; but how far this depression of the surface extends is not determined, this portion of the South American continent being very little known.

Rain never falls on the coast along the Pacific. In the valley of the Desaguadero, in the mountain-region, and in the plains, the summer is the rainy season; but the rain is continual only in the plains. The mountains are subject to tremendous hail-storms, during which the traveller is obliged to halt, and the parts of the body which are exposed are so severely bruised and cut by the hailstones as to bleed copiously. Thunder-storms are also peculiarly severe in these elevated regions. In winter the traveller is subject to a temporary blindness called *surumipi*, which is caused by the rays of the sun being reflected from the snow, and rendering it impossible to open the eyelids for a single moment; the smallest ray of light becomes absolutely insupportable. This complaint generally continues two days. Earthquakes are very common along the coast of the Pacific, less so in the valley of the Desaguadero and the mountain-region, but in the plains they have not been observed.

The scanty productions of the Valley of the Desaguadero have been noticed. The few places on the coast which are

cultivated produce no grain but maize: excellent fruits however grow, especially figs, olives, and melons, besides pomegranates, plantains, and *algarrovas* (*Prosopis dulcis*, Humb.), a kind of pulse, which grows to the length of a foot, with its seeds enveloped in a substance like cotton, which is eaten. It is of a sourish taste, but very cooling. Cotton, a little sugar-cane, and the *Arundo donax*, of which there are large plantations, are also cultivated.

The other portions of the republic, especially the beautiful vales watered by the Cochabamba and Cacha Mayo, are more fertile. As the levels which occur along their banks are at different elevations above the sea, they abound in all the fruits, grains, and other agricultural productions common to Europe and to tropical countries. Among the spontaneous products are cocoa, sarsaparilla, different species of vanilla, copaiba balsam, and caoutchouc. The mighty forests which line the rivers abound in the finest timber for all purposes, especially for ship-building, and in trees which distil aromatic and medicinal gums. The plantain is found in abundance; and there is a species of cinnamon called by the creoles the *canela de clavo*, which only differs in the greater thickness of the bark and its darker colour from that of the East Indies.

Besides the animals peculiar to the valley of the Desaguadero, there are the tapir, the jaguar, the leopard, six or seven sorts of monkeys, and several amphibious creatures. Of domestic animals, there are horses, asses, and mules, but for sheep the climate is too warm. Great herds of horned cattle find abundant pastures on the banks of the rivers in the plains.

Many of the birds seem to be unknown to the naturalist. There have however been noticed different kinds of parrots, several species of turkeys, and a multitude of beautiful singing birds, as the thrush, the whistler, and the maitico, remarkable for its plumage and the sweetness of its note.

All the rivers, but especially those of the plains, abound in fish; but the names given to them by travellers render it difficult to determine if any of them resemble those of Europe.

Gold is found in abundance in many places, but especially on the eastern declivity of the eastern Cordillera, where it is washed down by rivers which run between slate-mountains in narrow ravines. All the waters descending from this range, which fall into the Beni or its branches, carry down gold sand, but more particularly the small river Tipuani, which falls into the Mapiri. The mines of Potosi have long been considered as the richest in the world for their produce of silver, but they are now little worked, which is also the case with other silver mines. Copper is likewise abundant: at Corucucero, a small place about seventy miles from La Paz, enormous masses of native copper are found crystallized in the form of perfect cubes. Though, according to some experiments, this ore contains seven-eighths of pure copper, it cannot be turned to any use, being found in very high mountains and at a great distance from the coast. Besides these metals there are ores of lead and tin; and saltpetre, brimstone, and salt.

The inhabitants of Bolivia are composed of aborigines, and of people of foreign extraction. The aborigines form by far the greater portion of the population, probably more than three-fourths. They may be divided into those who speak the Quichua language, and those who speak different dialects. The Quichua language prevails among all the inhabitants of the coast and of the valley of the Desaguadero. Agriculture had been adopted by them before the arrival of the Europeans, and even at present it is their principal if not their exclusive occupation. But they make no improvement in agricultural operations, which may be attributed to their very feeble mental powers. They have been converted to the Catholic faith, but retain some ceremonies of their ancient religion.

The natives who do not speak the Quichua language inhabit the eastern declivities of the Andes and the plains extending to the east of them. They are divided into a great number of tribes who speak different languages: in the province of Moxos alone there are thirteen tribes. Some of them have been converted to the Christian religion, and with their change of faith they have also partly changed their manners and mode of living. Instead of going naked, they wear a light dress of cotton, have fixed dwelling-places, and apply chiefly to agricultural pursuits,

though their food still consists partly of fish and game. Some of them make excellent cotton cloth, and in general they have a taste for mechanical arts, and are good carpenters. They show also some talent for music and painting, in which they were initiated by the Jesuits. But the Indians who inhabit the Lower Beni below Reyes, and those on both sides of the Uchuy, as well as the Chiquitos, who occupy the country bordering on Brazil and Paraguay, still lead a roving life, live mostly on wild roots and fruits, and on game, and go naked.

The inhabitants of foreign extraction are either the descendants of Spaniards, or of Africans and the mixed races. The descendants of the Spaniards are most numerous in the mining districts, and in the valleys of the Cochabamba and Cacha Pilco, where they may be said to compose the great bulk of the inhabitants; they are much less numerous on the coast and in the valley of the Desaguadero, and their number in the plains is very small. The people of pure African blood are few in number, but the mixed races, which owe their origin to a mixture with negroes, are numerous on the coast; much less so in the mining districts, and in other parts very few of them are found.

The population of Bolivia has been differently stated. At first it was asserted that it amounted to 1,200,000 souls; but this is evidently an exaggeration. Immense tracts consist of barren deserts, others, though fertile, are not cultivated, and nearly uninhabited, and the bulk of the population is concentrated in two larger and several smaller valleys. More recent information has reduced the population to 630,000. As however no recent census has been taken, and several extensive districts, possessed by the independent Indians, are not even visited by Europeans, the population cannot be ascertained with any degree of certainty.

The republic of Bolivia is politically divided into five departments, and each department into provinces.

I. The department of Potosi comprehends the most southern portion of Bolivia, namely, the whole of the coast along the Pacific, the south-western part of the valley of the Desaguadero, and the southern part of the mountain-region as far north as the banks of the Pilco Mayo and Paspaya rivers. Nearly the whole of its surface is covered with sand or barren mountains, but as it contains numerous mines of silver at Potosi, Porco, and other places in the northern range, which have been long worked with considerable success, the country about them is more populous than any part of the republic, except the valleys of the Cacha Mayo and Cochabamba. It is divided into five provinces, Atacama, Lipez, Porco, Chayanta, and Chichas.

Except the capital, Potosi, this department contains no considerable place. Along the rocky coast there are some good harbours, and though the communication between the other parts of the country is rendered exceedingly difficult and expensive on account of the high mountains and the sandy desert along the coast, one of them, Cobija, at present called Puerto de la Mar, has been declared a free port, though it only contains about fifty families of Indians. Farther southward is the harbour of Tucupila.

II. The department of Charcas or Chuquisaca extends over the mountainous country between the rivers Paspaya and Rio Grande de la Plata, in which the valley of the Cacha Mayo is comprehended in all its extent, and a great portion of that of Cochabamba. A small part of the valley of the Desaguadero is also included within its limits. It contains some considerable mines, and is, with the following department, the most populous portion of Bolivia, on account of its fertility and the healthfulness of its climate. It is divided into six provinces, Zinti, Yamparaes, Tomina, Páris, Orúro, and Carangas. Chuquisaca is the capital of Bolivia. Orúro in the valley of the Desaguadero, nearly 13,000 feet above the sea, contains upwards of 5000 inhabitants, in whose neighbourhood considerable silver-mines are worked. A road leading from Orúro to Potosi traverses the southern part of the eastern Cordillera, and rises in the mountain-pass of Tolapalia to 14,075 feet.

III. The department of Cochabamba lies to the north of the preceding, and comprehends the greatest part of the rich and well-cultivated valley of the Cochabamba or Guapú, the Sierra de Santa Cruz, and the fine valleys which lie on the northern declivity of this chain. Every kind of agricultural produce is here grown in abundance, and in some of the rivers which fall into the Chaparé gold is col-

ected. This department is divided into six provinces, Sa-cába, Tapacarl, Arque, Paila, Clissa, Misque.

The capital of this department, Oropesa, contains about 16,000 inhabitants, and is the most industrious of the towns of Bolivia, the manufacture of cotton goods and of glass being carried on to some extent. It is situated at the western extremity of the department in a fine valley, traversed by the Codorillo, a branch of the Cochabamba. The small town Cochabamba, from which the department has received its name, lies on the banks of the river Guapái or Cochabamba.

IV. The department of La Paz extends over more than half of that part of the valley of the Desaguadero which belongs to Bolivia, and more particularly over the northern portion. It contains also the eastern Cordillera from the Nevado de Illimani northward, the numerous valleys which lie on the eastern declivity of that range, and that portion of the plain to the west of the Rio Beni. The lower part of the valleys and the plain are very fertile, but only a few spots are cultivated. The rivers bring down a great quantity of gold sand. It is divided into six provinces, Pacayea, Sicá-sica, Chulumani, Omasuyos, Larecája, and Apolobamba. It contains only one town of importance, the capital La Paz.

V. The department of Santa Cruz de la Sierra is by far the largest, and extends over nearly the whole plain which constitutes the eastern part of Bolivia. The greater part of it is still occupied by independent tribes of Indians; and other districts, where the Creoles had formerly settled, have been abandoned on account of their unhealthiness. It is divided into five provinces, Moxos, Chiquitos, Valle Grande, Pampas, and Baures. Some time ago it was reported that the inhabitants of this department were not inclined to join the republic, but intended to form a separate state under the name of Santa Cruz de la Sierra, but no certain information has reached us on this subject. The capital of it is San Lorenzo de la Frontera, not far from the old town Santa Cruz de la Sierra, on the banks of the Rio Grande de la Plata, with about 10,000 inhabitants.

Very little is known of the present political condition of this country. In 1825, when Buenos Ayres had renounced its claim on Upper Peru, and the representatives of the country determined to form an independent state, they adopted a constitution proposed by Bolivar, according to which the executive power was to be placed in the hands of a president chosen for life, and the legislative was to consist of three bodies, the senate, the tribunes, and the censors. At the same time Bolivar was chosen president. But the military force which Bolivar had sent to Bolivia, which consisted of Columbian troops, being expelled by an army from Peru, the constitution of Bolivar was abolished, and the Bolivians were left at liberty to make a new constitution. What kind of constitution has been adopted is not known.

No country, perhaps, is under greater disadvantages with respect to commercial intercourse with foreign countries than Bolivia, though possessing a coast of more than 250 miles, with several good harbours. The part which is contiguous to the coast is a sandy desert, which produces nothing fit for a foreign market, and it is separated from the rest of the country by a chain of high and nearly impassable mountains, up to the parallel of Potosi. Even if a road were made in these parts, it would traverse a country probably not less than 300 miles in extent, where neither men nor animals could find food. The only road which connects the coast with the internal districts of the republic, runs on the comparatively level country along the shores, and passes to the valley of the Desaguadero by the pass of Lenas (19° 45') which rises to 14,210 feet, and thence runs to Orúro and La Paz. But this road, like all others in this country, is only practicable for mules and llamas, and consequently does not allow the transport of very heavy or very bulky commodities. To go from La Paz to the more populous districts on the eastern side of the eastern Cordillera, this high chain must be traversed by the pass of Pacuani (16° 33'), which rises to 15,226 feet. Another mountain-pass which leads from Orúro to Chuquisaca, which rises to 14,700 feet, is called the Pass of Challa (17° 40'). The difficulties encountered in travelling from the port of Cobija to Orúro are so great, that though the Bolivians have declared Cobija a free port, they hardly use it, and prefer importing the small quantities of foreign commodities for which there is a demand, through Arica and

Tacna. The road connecting Tacna with La Paz traverses one of the two passes called Las Gualillias, of which the northern (17° 43') rises to 14,200, and the southern (17° 50') to 14,830 feet, and though foreign commodities passing through any part of Peru have to pay a transit-duty of 3 per cent., this road is preferred for the transport of merchandise. Few foreign commodities are imported into Bolivia. They are chiefly iron and hardware, with a few articles of finery, as silk, &c. The exports are nearly altogether limited to the precious metals, and to different kinds of woollens, made of the wool of the llamas and alpacas, and to hats made of the wool of the vicuñas. The agricultural products of this country will never be exported, till commerce has made its way up the Amazon and Madeira rivers.

Being as it were excluded from foreign commerce, the Bolivians are obliged to satisfy their wants by their own industry. The manufactures of cotton are the most extensive. The better kinds are made in Oropesa; but in many districts the Indians make great quantities, which are coarse though strong. Next to these are the woollens, made of the hair of the llamas and alpacas. The coarser kind, called *hanascas*, is used by the lower classes for dress, and likewise for blankets; the finer sorts, called *cambis*, are embroidered with great care, and used as carpets by the rich. The best are made at La Paz, and are very dear. At San Francisco de Atacáma very fine hats are made of the wool of the vicuña, and at Oropesa very good glass is made. In some towns in the neighbourhood of the silver-mines they make vessels of silver-wire, which are not without elegance, but Meyen thinks that those made in China are superior in taste and much cheaper. In some districts the Indians dye the plumes of the American ostrich with brilliant colours, and make of them fans and a kind of parasols. (Pentland and Parish in *Geogr. Journ. V.*; Meyen's *Reise um die Welt*; *Memoirs of General Miller*; Capt. Basil Hall; Temple; Azara.)

BOLLANDUS, JOHN, a learned Jesuit, was born at Thienen (Tirlemont) in the Netherlands, August 13th, 1596. He entered the Society of Jesus at the early though not unusual age of sixteen, and became eminent in it as a teacher both in the Netherlands and other countries. The share which he took in the *Acta Sanctorum*, or 'Lives of the Saints,' entitles him to especial notice.

The history of this work is not uninteresting, although the work itself, otherwise than for occasional consultation, defies time and patience. It consists of fifty-one volumes in folio, of the larger size and bulk. The design of this vast collection was first projected by Père Heribert Rosweida, a jesuit then of the age of sixty, and consequently too far advanced to execute much of his plan, which was to extend no further than sixteen volumes folio, with two volumes of illustrations: a trifle in those days, had he begun earlier. In 1607 he had begun by printing an octavo volume, entitled *Fasti Sanctorum*, consisting of the manuscript lives of some saints which he happened to find in the Netherlands; but he died Oct. 5th, 1629, before he could accomplish what he had undertaken. The execution of his project was then entrusted to Bollandus, who was about this time thirty-four years of age, and who removed from Mechlin to Antwerp for the purpose. After examining Rosweida's collections, he established a general correspondence all over Europe, instructing his friends to search every library, register, or repository of any kind, where information might be found; but becoming soon sensible of the weight of his undertaking, he called in the assistance of another Jesuit, Godfrey Henschen of Guelderland, younger than himself, more healthy, and equally qualified in other respects. With this aid he was enabled to publish the first two volumes, folio, Antwerp, 1643, which contain the lives of the saints of the month of January, the order of the Calendar having been preferred. In 1658 he published those of February in three volumes, and two years after, his labours still increasing, he engaged with another associate, Père Daniel Papebroch, at that time about thirty-two years old, whom he sent with Henschen to Italy and France, to collect manuscripts, but he died before the publication of another volume, Sept. 12th, 1665. After his death the work was continued by various hands, who were called 'Bollandists.' Henschen and Papebroch published the lives of the saints of the month of March in three volumes, Antw. 1668; and those of April in three volumes, 1675. The saints of the month of May occupy

seven volumes, the second and third, by Henschen and Papebroch only, were published in 1683; the first, fourth, and fifth bear the date of 1685, and had the assistance of Francis Baert and Conrad Jauning; the sixth and seventh volumes were published by the same parties, in 1689. Henschen's personal labours however had been concluded by his death, Sept. 11th, 1681. The saints of June fill six volumes; the first published in 1695; the second in 1698; the third in 1701; the fourth in 1707, by the same parties; in the fifth, 1709, John Baptist Sollier was added as an editor; the sixth volume of this month, 1716 in two parts, was edited by Conrad Jauning alone: the 'Martyrologium Usuarli Monachi' being added by Sollier. Papebroch died June 25th, 1714. The saints of July extended to seven volumes; the two first by Jauning, Sollier, and John Pinei, published in 1719 and 1721; the title of the third volume had the addition of the name of William Cuper; in the fourth volume, 1725, the name of Peter Bosch was added; and these names were continued in vol. v. 1727, vol. vi. 1729, and vol. vii. 1731. The same names also appear as editors of the first three of the six volumes of August, 1733, 1735, 1737; the fourth volume of August was by Pinei and Cuper only, 1739; the fifth and sixth, 1741 and 1743, by Pinei, Cuper, and John Stilting. The saints of September fill eight volumes. The first, 1746, is by Pinei, Stilting, John Limpin, and John Veldius; the second, 1748, by Stilting, Limpin, Veldius, and Constantine Suyskhen; the third, 1750, by the same parties, with the addition of John Perier; the fourth, 1753, by Stilting, Suyskhen, and Perier; the fifth, 1755, by the same, with the addition of Urban Sticken; the sixth, seventh, and eighth, 1757, 1760, and 1762, by Stilting, Suyskhen, Perier, and John Cleus. The saints to October 14th fill six volumes; the first, 1765, edited by Stilting, Suyskhen, Perier, Cornelius Bye, Jacobus Bue, and Joseph Ghesquière; the second, 1768, and the third, 1770, by Suyskhen, Bye, and Ghesquière. Hitherto the editors are all designated as members of the Society of the Jesuits; and the volumes uniformly printed at Antwerp. The fourth volume of October was printed at Brussels, 'typis Regiis,' 1780, by the same editors, with the addition of Ignace Hubens, and all are now styled 'Presbyteri Theologi.' The fifth volume, printed at Brussels 'typis Cæsareo-regiis,' 1786, is by Corn. Bye, Jacobus Bue, and John Baptist Fonson. The sixth volume, 'Tongerlœm, typis Abbatæ,' printed at the Abbey of Tongerlo, 1794, is described as 'partim à Cornelio Byeo, Joanne Baptista Fontono, presb. Anselmo Berthodo Ord. S. Benedicti P. M. partim à Joanne Bueo presb. Sardo Dyekio, Cypriano Goorio, Mathia Stalsio, Ord. Præm. Cann. Regul.'

It is to be regretted that a work so full of curious information as the 'Acta Sanctorum,' continued through a series of volumes for a hundred and sixty-five years, should remain unfinished: but the great mass of monasteries in Europe has been suppressed: no purchasers can now be found for long sets of legendary reading; and it seems likely that the remaining lives will never be added to the collection. The continuation was interrupted, probably for ever, by the entrance of the French troops into Belgium in 1794.

Bollandus published separately,—1. 'Vita S. Liborii Episcopi,' 8vo. Antw. 1648. 2. 'Brevis Notitia Italiæ ex Actis SS. Januarii et Februarii,' 8vo. Antw. 1648. 3. 'Brevis Notitia triplici status, Ecclesiastici, Monastici, et Sæcularis, excerpta ex Actis SS. vulgatis à Bollaudo et sociis,' 8vo. Antw. 1648.

The following works may be considered as connected with the great set of the 'Acta Sanctorum':—1. 'Exhibitio Errorum quos Papebrochius suis in notis ad Acta Sanctorum commisit, per Seb. à Sancto Paulo,' 4to. 1693. 2. 'Examen Juridico-Theologicum præambulorum Sebastiani à Sancto Paulo,' auctore N. Rayson, 4to. 1698. 3. 'Responsio D. Papebrochii, 3 tom. 4to. 1696-1698. 4. 'Acta Sanctorum Bollandiana apologeticis libris vindicata,' fol. Antw. 1755. This last work is usually found as an accompaniment to the set of the 'Acta.'

(Life of Bollandus prefixed to the first volume of the month of March in the *Acta Sanctorum*, where is also the portrait of Bollandus; Foppens, *Bibliotheca Belgica*, 4to. Brux. 1739, tom. i. p. 584; Moreri, *Dictionn. Historique*, tom. ii. fol. Par. 1759; Chalmers's *Biographica Dictionary*, vol. vi. pp. 25, 26; *Biogr. Universelle*, tom. v. p. 10.)

BOLONGNA (Lat. *BONONIA*), a city in the Papal State, next to Rome in population and importance. It is situated in 44° 30' N. lat. and 11° 20' E. long. in a plain north of the Apennine ridge and between the rivers Reno and Savena. A canal, called Naviglio, navigable for large boats, connects Bologna with Ferrara, from whence, by means of the Po, the Adige, and the intermediate canals, the water-communication extends to Venice. The population of Bologna is about 70,000, but with its surrounding territory or commune about 74,300. (Calindri, *Saggio Statistico dello Stato Pontificio*, 1830.) Towards the end of the last century, when Savioli wrote his *Annali Bolognesi*, the population of Bologna was then also reckoned at 70,000. Bologna is a thriving city, with an industrious population: the higher classes, who consist chiefly of landed proprietors, are wealthy. Many noble families reside at Bologna, where they have fine palaces, the most remarkable of which, the palaces Fava, Magnani, Bentivoglio, Zambecari, Marescalchi, Bevilacqua, Lambertini, Baciocchi, whose owner is Napoleon's brother-in-law, Ercolani, Malvezzi, Sampieri, have valuable galleries and fresco paintings by the great masters. The palace of the Podestà, in which Hentzius, son of the Emperor Frederic II., and nominal king of Sardinia, spent in confinement twenty-two years of his life, and in which he died in 1272, contains the archives of the city. The Palazzo del Pubblico, a large structure, is the residence of the cardinal legate and the seat of the various courts of justice. In the square before it is a handsome fountain with the colossal statue of Neptune by Giovanni da Bologna.

Bologna abounds with churches, most of which are rich in paintings. The principal are San Petronio, a magnificent though incomplete structure, which has a meridian line traced on its pavement by the astronomer Cassini; the cathedral; and the church of San Domenico, with the tomb of Hentzius, of Taddeo Pepoli, the best magistrate of Bologna in the time of the republic; of Guido and his pupil Elisabetta Sirani; of Count Marsigli, and other illustrious individuals. The adjoining convent is the residence of the Tribunal del Sant' Uffizio or Inquisition, which still exists in the Roman States, where however its power is little felt, and it has none of the terrors of the Inquisition such as it existed till lately in Spain and Portugal.

Bologna is surrounded by walls and has twelve gates. The streets are tolerably wide, and most of them have low arcades on each side to shelter pedestrian from the rain. In the centre of the city are two lofty towers, the highest of which called Asinelli from the name of its founder, is 320 feet high; the other, Garisenda, is only about one-half of the height of its neighbour, but inclines on one side about nine feet. This inclination, it is said, like that of the tower of Pisa, was the result of a depression of the ground under its foundations, and the fearful effect it produces on the beholders is finely alluded to by Dante in canto 31 of the 'Inferno.' The Asinelli is also a little out of the perpendicular, though in a much slighter degree. Both towers date from the twelfth century. It has been observed that Bologna, seen from the neighbouring hills, has in its outline the appearance of a vessel with one mast, represented by the Asinelli, while the inclined Garisenda represents the chains.

The University of Bologna is the oldest and still one of the first in Italy. Its origin is stated to have been under Theodosius II., and it is said to have been restored by Charlemagne. We find it enjoying great celebrity early in the twelfth century. It has the following classes,—theology, medicine, law, philosophy and mathematics, and belles lettres. The faculty of medicine has the most and the best filled chairs. For the distribution of the various courses, and other details concerning the method of instruction, we refer to an article in No. XVI. of the Quarterly Journal of Education on the Statistics of Education in Italy. Annexed to the university are a museum, a botanical garden, an anatomical cabinet, and a library containing 80,000 volumes and 4000 MSS. Among the actual or late professors of the University of Bologna the following names deserve mention,—Galvani, Zannotti, Monti, Orioli, Tommasini, Mezzofanti, and Clotilde Tambroni; the last was a late professor of Greek, who died in 1817. Bologna boasts other female professors, especially Novella d'Andrea, who taught canon law in the fourteenth century; and Laura Bassi, professor of physics, in the eighteenth century.

Besides the library of the university, the city of Bologna

has a public library, the legacy of a clergyman named Magnani, which occupies three rooms of the convent of San Domenico, and contains 83,000 volumes. The academy of the fine arts has a splendid gallery of paintings, chiefly of the Bolognese school. The Instituto delle Scienze, founded by Count Marsigli, has an observatory. The Philharmonic Lyceum, in which 100 pupils are maintained at the expense of the town, possesses a valuable musical library of 17,000 volumes, collected by Father Martini, a great Bolognese composer of the eighteenth century. The College Venturoli, founded in 1825, is devoted to students of architecture. There is also a college for Spanish students, founded by Cardinal Alborno; and another for Flemish students, who are sent here by the goldsmiths' company of Brussels. It was founded by John Jacobs, a Flemish goldsmith, and a friend of Guido. The public school for the children of the poorer classes is a fine building by the Bolognese architect Terribilia; the children are taught, gratuitously, Latin, arithmetic, singing, and drawing. (Valéry, *Voyage Littéraire en Italie*, 1833.)

Bologna is an archbishop's see, and the series of its bishops ascends as far back as the fourth century. St. Petronius, who lived about 430, was the tenth bishop of Bologna. The city as well as its province, called Legation, are administered by a cardinal legate appointed by the pope. The court of appeal for the four provinces of Bologna, Ferrara, Ravenna, and Forlì, sits at Bologna, and consists of six judges.

There are several manufactures of silks, paper, and pottery. The large sausages of Bologna, called *mortadelle*, have a long established reputation, as well as its liqueurs and confitures. The people of Bologna are frank, spirited, and fond of gaiety; they are the most independent in mind and bearing of any in the Papal State, owing probably to the long enjoyment of their municipal liberties; the lower classes are noisy, and their dialect is the most uncouth and rough sounding in all Italy. The women are generally good looking. Among the educated classes there is much information, and Bologna is still one of the most learned towns of Italy. There is a casino, or assembly-rooms for the nobility, besides reading-rooms and private conversazioni. There are several theatres, at which some of the best performers of Italy are generally engaged.

The air of Bologna is pure, but the sudden changes of its temperature, owing to the proximity of the Apennines, occasion frequent inflammatory diseases. Cutaneous diseases were formerly common among the people, but the increase of cleanliness, and a better diet, have contributed greatly to extirpate them. Bologna is one of the Italian cities in which there are most foundlings; about one-seventh of the births are illegitimate.

Bologna has produced many distinguished individuals. No less than eight popes have been natives of this city, among whom Benedict XIV. is the most illustrious. The naturalist Aldovrandi, the anatomist Mondino, who was the reviver of anatomy in Europe at the beginning of the fourteenth century, the physician and naturalist Malpighi, the naturalist and astronomer Marsigli, the mathematician and engineer Eustachio Manfredi, the brothers Zannotti, Galvani and his nephew Aldini, Zambeccari, and many more scientific and literary men were natives of Bologna. Fantuzzi has devoted no less than 9 vols. folio to the biographies of Bolognese writers: *Notizie degli Scrittori Bolognesi*, 1781-94.

Outside of the walls, the Campo Santo, or cemetery, contains many handsome monuments, which have been illustrated in a recent work: 'Collezione scelta di Cento Monumenti Sepolcrali del Cimitero di Bologna.' On the hill called Della Guardia, about three miles from Bologna, is the handsome church of La Madonna di S. Luca, which is joined to the town by a long arcade consisting of 635 arches. The once splendid monastery of S. Michele in Bosco was sadly dilapidated during the French wars, and its frescoes by the Caracci and others were nearly effaced by the hands of the soldiers.

The origin of Bologna is lost in obscurity. It was the principal city of the Etruscans north of the Apennines, and was then called Felsina. When the Gauls invaded Lombardy, the Boii, one of their tribes, crossed the Po, and established themselves in Felsina and the neighbouring country. Afterwards the Boii became involved in wars with Rome, and they were favourable to Hannibal in his invasion of Italy. After the end of that war the Boii, with the other Cisalpine

Gauls, were conquered by the Consul Scipio Nasica, and Felsina became a Roman colony B.C. 191. The Romans changed its name into Bononia. The Via Æmilia, a continuation of the Via Flaminia, was carried from Ariminum through Bononia. In the civil war between Antony and the senate, Bononia was attached to the party of the former, and it was here that the Consul Pansa, defeated by Antony in the first battle of Mutina, died of his wounds B.C. 43. In the autumn of the same year the famous meeting took place between Antony and Octavius in a small island formed by the river Rhenus (Reno) between Bononia and Mutina. The precise site of that island has been a matter of dispute. There are documents as late as the thirteenth century in which the appellation Isola Rheni occurs as being in the district of Borgo Panigale, which is a village about four or five miles north-west of Bologna, and two or three miles north of the point on which the road from Bologna to Modena crosses the Reno. It appears also that the little river Lavinius, still called Lavinio di Sopra, which now flows northwards into the Samoggia, whence the united streams run to join the Reno above Cento, formerly on descending from the Apennines into the plain of Bologna took a short cut to the eastward into the Reno, not far from the town, and somewhere about the spot where the island is supposed to have been, and this junction would serve to explain the words *ad confluentes* used by some historians in speaking of the place of meeting. The Reno, like all Apennine streams, is subject to overflowings, and consequent alterations in its bed, and it forms even now several little islands near Bologna.

A fire consumed great part of Bononia under Claudius (Tacit. xii. 58), when 10,000,000 sesterii were granted from the public treasury for rebuilding the town. On this occasion young Nero pleaded before the senate in favour of Bononia. (Sueton., *Nero*, vii.) In the third century the first Christian church was built in Bononia, and dedicated to St. Felix, which was afterwards destroyed in the persecution under Diocletian, when Pruculus, Agricola, Vitalis, and other Christians of Bononia, suffered martyrdom. Bononia escaped with comparatively little damage the invasions of the northern barbarians. Alaric besieged but did not take this city. It also seems to have escaped the ravages of Attila. In the time of the Longobards Bononia formed part of the exarchate of Ravenna under the eastern empire, until Liutprand occupied it with the rest of that province. Bononia was one of the towns given by Pepin to the see of St. Peter, after his defeat of the Longobards. Under the church, Bononia was administered by dukes, probably of Longobard race. In the confusion of Italian affairs after the extinction of the Carolingian dynasty, the towns of the exarchate no longer recognized the dominion of the church, whose temporal sway was not acknowledged even at Rome itself. The bishops, and the various dukes and marquesses divided among them the dominion of the country. Under the Othos of Saxony, Bononia, as well as the other cities of North Italy, obtained privileges and franchises as imperial towns governed by their own municipal laws. Under Conrad the Salic we find counts of Bononia, who administered justice together with the Missi of the emperor.

In the wars of the investitures between the church and the empire, the towns became *de facto* independent of the latter. The municipal independence of Bononia or Bologna was acknowledged by the Emperor Henry V. in 1112, by a charter. The commune had the right of coining money, The citizens assembled in general comitia, and appointed the magistrates, at the head of whom were the consuls, who were chosen from among the class of milites or nobles only. The judges and notaries were to be approved by the emperor, in whose name the judges administered justice. The town was divided into four wards, the militia of which were commanded by their respective vexilliferi. The country districts were subject to the town, the territory of which was at first extremely limited, being surrounded on every side by a host of feudal nobles, and by the domains of the churches and monasteries, which were independent of the jurisdiction of the town. By degrees however several of the surrounding nobles applied for the citizenship, and being admitted came to reside in the town. Others lost their territory in wars against the city, so that Bologna came to rule over a great part of Æmilia, the country now generally called Romagna, which extends from Bologna to Rimini.

In the war between Frederic I. and the Lombard League

Bologna joined the latter. It likewise fought against Frederic II., on which occasion the Bolognese took prisoner Hentzius, the natural son of the emperor, whom they detained in captivity till the time of his death. The war of the Bolognese against the Modenese, who were of the imperial party, has been immortalized by Tassoni in his clever burlesque poem 'La Secchia Rapita'. The factions of the Guelphs and Guibelines proved the ruin of the liberties and independence of Bologna, as well as of the other North Italian cities. Ambitious and rival families sided under either banner. The Lambertazzi, the head of the Guibeline party, being worsted in the city by the Geremei, the chief family of the Guelphs, were, after much bloodshed, driven away in 1274 with 15,000 of their partisans and dependents, men, women, and children. They however rallied in the towns of Romagna, where they were joined by Guido da Montefeltro, lord of Urbino, and made incursions to the very gates of Bologna. The Geremei applied to the pope for assistance, offering to acknowledge him as liege lord of Bologna. Pope Nicholas III. accordingly sent a legate to Romagna to restore peace to that province, and through his mediation the Guibeline exiles were recalled. The pope was now acknowledged protector and suzerain of Bologna. In 1334 the pope's legate, Cardinal Bertrand du Poist, having rendered himself odious to the people by his tyranny, was driven out of the city, and soon after Taddeo de' Pepoli, a wealthy citizen, was proclaimed lord. He used his authority with temperance and justice and for the good of the commonwealth for twelve years, but after his death his two sons, not able to maintain their power, sold the town to the Archbishop Visconti of Milan. The yoke of the Visconti was hard and cruel, and after several rebellions and reconquests, sometimes under the Visconti, sometimes ruled by the papal legates, now a prey to popular anarchy, and now subject to some of its own principal families, among which that of Bentivoglio stood highest in influence, Giovanni Bentivoglio was made Principe del Senato, or first magistrate of Bologna, in 1462, and he retained the chief authority over the state for forty-four years, under the nominal high dominion of the papal see. [BENTIVOGLIO.] Giovanni however incurred the displeasure of the haughty pontiff, Julius II., who marched an army against him in 1506, and took the city, where he established the direct dominion of the church. In 1511 the sons of the late Giovanni Bentivoglio, supported by the French, regained possession of Bologna, where they remained until the following year, when, after the battle of Ravenna and the retreat of the French armies, the town surrendered again to Pope Julius, who built a castle to keep the citizens in awe. From that time till the end of the eighteenth century Bologna remained subject to the papal see, retaining however its senate, the members of which were appointed for life by the pope, and appointed in their turn all subordinate civil officers, and administered the finances of the commune; a gonfaloniere di giustizia, and eight anziani, who were changed every two months; and the tribuni della plebe, and massari dell'arti, who were the heads of the respective trades or companies. The senate coined money in the name of the city, and the word 'Libertas' was retained on its escutcheon.

In June, 1796, Bonaparte entered Bologna, and drove away the papal authorities. In February, 1797, Bologna became the chief town of the Cispadane republic, which after a few months was united to the Cisalpine republic, afterwards called the Italian republic, and lastly transformed into the kingdom of Italy in 1804. Bologna was then the capital of the department Del Reno. In 1814 Bologna was occupied by the Austrians. In 1815 General Stefanini, in the name of Austria, restored Bologna and the other legations to the papal authorities. In 1831 an insurrection broke out at Bologna against the papal government, which was put down by the arrival of an Austrian auxiliary force.

For the antiquities of Bologna see Malvasia, *Marmora Feltrina*, and Montalbani, *Antichità di Bologna*; and for its history Savioli, *Annali*; and Leandro Alberti, *Istorie di Bologna*.

BOLIGNA, LEGAZIONE DI, a province of the papal state, is bounded on the east by the province of Ravenna, on the north by that of Ferrara, on the west by the duchy of Modena, and on the south by the central ridge of the Apennines, which divides it from Tuscany. Its length from south-west to north-east, from the sources of the Reno above La Porretta to the confines of Ferrara beyond Malalbergo, is about fifty miles, and its greatest breadth from the

Panaro, which divided it from Modena, to the Silaro, which divides it from Imola in the province of Ravenna, is about thirty. It is watered in its length by the Reno, which enters the Po near Ferrara, and by numerous torrents descending from the Apennines. The north-east part of the province near the Po is very marshy and subject to inundations, and the southern part is mountainous, but the middle part or plain of Bologna is very productive, and in a high state of cultivation. The lower hills also, and valleys at the foot of the Apennine chain, are well cultivated. Corn, wine, fruit, all sorts of vegetables, hemp, flax, and silk are the principal products of the country. A great quantity of cattle is also reared.

The population, including the city, is 324,000. (Calindri, *Saggio Statistico*, 1832.) The territory is divided into 260 communes or parishes, and has a number of large villages and market-towns: the principal are, St. Agata, 3000; St. Agostino, 5000; Argetata, 3000; Argile, 2600; Baricella, 5000; Bazzano, 2200; Borgo Panigale, 3400; Budrio, 10,000; Calderara, 3600; Castelfranco, 5500; Castel Guelfo, 2400; Castelmaggiore, 3400; Castel S. Pietro, 6600; Castiglione, 2800; Crespellano, 3400; Crevalcore, 6800; Galliera, 3200; S. Giorgio di Piano, 3300; S. Giovanni in Persiceto, 6700; Granaglione, 2700; Lojano, 8000; Malalbergo, 4700; Medicina, 9000; Molinella, 7000; Minerbio, 5000; S. Pietro in Casale, 4500; Porretta, 2200. Each of these numbers includes the whole population of the respective territory or commune, of which, generally speaking, about one-half may be reckoned as the resident population of the town, the rest living in detached farm-houses, cottages, or hamlets. All the above towns are styled *terre*, they are all parishes and market-places, and many of them are surrounded by walls. They have each a municipal council composed of twenty-four or eighteen members, taken one-half among the nobles or chief proprietors, and the other half among the tenants or farmers. Seats in the municipal councils are hereditary, subject however to the qualification of holding possessions or domicile within the commune being past twenty-four years of age, and having a good moral character. Two relatives in the first degree cannot sit in the same council. Vacancies in the councils are filled by the councils themselves by majority of votes. The councils appoint the magistrates, i. e. the gonfaloniere, and four elders, and all the other communal officers and servants. The gonfaloniere is renewed yearly, the elders are renewed by halves every year. The councils vote every year the municipal expenditure, as well as the communal taxes and other means to provide for it. This budget must be approved of by the legate, after which it is printed and published. The council administer the communal property subject likewise to the inspection and approbation of the legate. This municipal system exists in all the papal state.

The peasants of the province of Bologna are seldom proprietors, few have even leases, but they hold their farms from father to son by a tacit agreement, giving one-half of the produce to the landlord and paying half the taxes. Several branches of the same family are often seen living and working together on the same farm. They are sober, peaceful, and industrious, and generally superior in morality to the lower classes of the cities. The farms are not so large as in Lombardy, but the peasantry live better on the produce of the farm than the hired and poorly paid labourers of the latter country. This metayer system prevails over most of the northern papal provinces, and also in Tuscany.

Upon the whole the province of Bologna is one of the finest and richest in the papal state. The mineral waters of La Porretta in the Apennines are much frequented by invalids.

BOLONESE SCHOOL OF PAINTING. The historians of the fine arts employ the word school, as it is often used in reference to other pursuits, only to denote a similarity of opinion, aim, or practice among many individuals; but the term is so far true to its literal import, that the similarity of taste alluded to does not so much arise from the accidental coincidence of independent modes of thinking, as from some common influence, and generally from the example of one powerful mind. Nor does this always involve a defect of originality: in the complicated art of painting the advances to perfection were of necessity very gradual; the greatest masters were largely indebted to the labours of their predecessors, and each of them may thus be said to have sprung from a school as certainly as that he founded one. But when excellence was once ap

proximated, originality seemed only compatible with a difference in the mode, since a difference of degree appeared to be no longer possible; and while the desire of novelty sometimes degenerated to caprice, and imitation ended in insipidity, the most plausible ambition seemed to be that which aimed at combining excellences not hitherto united in any one school. This was at least the professed object of the Caracci, the most celebrated among the Bolognese masters. It happens that this new effort took place in a school which had not before distinguished itself so greatly as the rest. The most brilliant epochs of art, south of the Alps, concur; the greatest masters having been contemporary with each other in the beginning of the 16th century. To this rule, which applies to Venice, Parma, Florence, and Rome, the Bolognese school is an exception, since it attained its comparative perfection nearly a century after the production of the finest works of Italian art.

The merits of the most distinguished later masters of the Bolognese school have been done ample justice to by many historians and biographers, but it must be confessed that the Florentine Vasari, who was naturally anxious to extol the genius of the Tuscan artists, sometimes betrays a disposition to undervalue or to vilify the earlier Bolognese painters whom he notices in his work, and he did not live to see the revolution which the Caracci produced. The chief historian of the Bolognese school, Malvasia (Felsina Pittrice), on the other hand, in his eagerness to defend his countrymen, has not unfrequently exaggerated their merits, and the two should be compared with the more impartial opinions of recent writers, among whom Lanzi, though again perhaps disposed to exalt his own Florence, will be found the most rational.

The arts of design were kept alive during the middle ages by mosaics and by illuminated manuscripts; the former were commoner at Rome and Ravenna, than in the other Italian cities, but the art of missal-painting, which was practised wherever there was a monastery, seems to have attained some perfection at Bologna at an early period. The Franco Bolognese mentioned by Dante (*Purgatorio*, canto 11) as superior in this art to his master, Oderigi di Agubbio, it appears sometimes painted in larger dimensions, and the recorded dates of still earlier painters might enable Bologna to contend for the palm of antiquity not only with Florence but with Siena and Pisa. Franco, who has been called the Giotto of his school, is the supposed founder of the style of the Bolognese painters of the 14th century. Many of their now fading works exist in the church di Mezzaratta, a gallery, as it were, of ancient specimens which, as Lanzi remarks, is to this era of the Bolognese school what the Campo Santo at Pisa is to that of the early Florentines. In order, however, that this comparison should be just, it would be necessary to select corresponding dates; some of the works in the Campo Santo, as for instance those of Benozzo, were executed after the middle of the 15th century.

About 1400 the most prominent name is Lippo Dalmasio, called, from the subjects to which he almost confined himself, Lippo delle Madonne: some of his works remain, and Malvasia relates, with reference to one in the church of S. Procolo, that he heard Guido extol its purity and grandeur of expression, and assert that, notwithstanding the subsequent advancement of the art, no modern painter could infuse so holy a feeling into similar subjects. In this early epoch of the school the predilection for the style of the Greek paintings, the common prototypes of Italian art, seems to have been more decided, and to have lasted longer than any other. It may be here observed that the modes of representation to which the Byzantine painters and their Italian followers adhered were in many cases consecrated by tradition, but independently of this the works themselves, rude as they were, often exhibited a solemnity of treatment which may in some degree account for the veneration in which they were held. The Florentines who visited Bologna and painted there left no permanent impression; a native artist, Marco Zoppo, who studied at Padua (where he was the rival of Mantegna) and afterwards at Venice, introduced the arrangement of the Venetian altar-pieces in some works subsequently done by him in Bologna; but the early simplicity or severity was preferred perhaps as fitter for religious subjects, and was rather confirmed than discarded by the greatest painter of the first epoch, Francesco Francia. This artist, who was contemporary with Raphael, and survived him some years according to Malvasia, was

celebrated as a goldsmith and engraver of medals before he betook himself to the pencil at a comparatively advanced age. Vasari says that he was born in 1450, and that his first picture was dated 1490. He is celebrated as a painter who succeeded beyond most others in giving an expression of sanctity and purity to his Madonnas, and a letter of Raphael's is extant in which this merit is particularly alluded to. Francia, who, in that middle style which the Italians have called *antico-moderno*, ranks with Perugino and Bellini, should, like them, have preceded the highest development of the art in a Raphael or a Titian; but it is precisely in this highest corresponding point that the Bolognese school is wanting, and the eulogists of Francia have in vain endeavoured to exalt him to a level with the painters of the first rank with whom he happens nearly to coincide in date. Vasari relates that when the St. Cecilia of Raphael made its appearance in Bologna, according to him in 1518, Francia, to whose care it had been consigned by the great painter himself, was so amazed at its vast superiority to his own efforts that he soon after died of mortification. It has been satisfactorily proved, by the date of some pictures of Francia, that he lived some years after this, but the story has been recently repeated by Quatremère de Quincy in his life of Raphael, and by Tieck (*Phantasiën über die Kunst*). The school of Francia presents no distinguished names. The summit of the art had been already reached elsewhere, and his followers, who were inferior to him, were eclipsed by the disciples of Raphael.

These introduced a more or less servile imitation of the style of their great model into Bologna; the best were Ramenghi called Bagnacavallo, and Innocenza da Imola. It is in the account of Bagnacavallo (which includes a notice of Innocenza, Aspertini, and Girolamo da Cotignola) that Vasari speaks so contemptuously of the Bolognese school. Bagnacavallo was however occasionally original, and some of his productions were considered worthy of the particular attention and study of succeeding masters. Three distinguished names precede the epoch of the Caracci, Primaticcio, Niccolò dell' Abate, and Pellegrino Tibaldi. Niccolò dell' Abate belongs strictly to the school of Modena, but he is associated with the Bolognese painters by some works at Bologna, by his joint labours with Primaticcio at Fontainebleau, and by the extravagant compliment paid to him in a sonnet by Agostino Caracci, in which he is said to unite all the excellences of all the great masters. Primaticcio and Tibaldi began their studies, though at very different times, under Bagnacavallo; the first, who was the elder by many years, assisted Giulio Romano at Mantua, and under his direction acquired a facility and a classic taste which he afterwards displayed in a series of designs for the ceilings of Fontainebleau, where he was employed by Francis I. and his successors. The frescoes painted from these designs, and which are now no longer in existence, were chiefly executed by Niccolò dell' Abate. Pellegrino Tibaldi soon left Ramenghi for Rome and Michael Angelo, to whose style he devoted himself; his successful imitation of the great Florentine master, whose powerful design he sometimes blended with the excellences of other schools, places him in a relation to his prototype similar to that which Bagnacavallo holds to Raphael, and the Caracci honoured him with the appellation of 'the Reformed Michael Angelo.' Tibaldi was employed in Milan and afterwards in Spain, and thus the three greatest masters of this intermediate period were absent from Bologna a great part of their lives.

The name of Prospero Fontana stands at the head of those who, living from the earlier to the latter part of the sixteenth century, and inheriting but little of the genius of the great masters, survived their own slender reputation to witness the rising fame of the Caracci. In the same class may be mentioned Passerotti, as the latest Bolognese painter alluded to by Vasari. The others may be passed over, with the exception of Denis Calvart, a native of Antwerp, who, after settling in Bologna, where he opened a school, not only had the honour of partly instructing Guido, Domenichino, and other celebrated Bolognese painters, but also of introducing that elevated style of landscape-painting which afterwards added a new lustre to the school in the hands of the Caracci, Domenichino, Grimaldi, and others.

Thus the imitation of the two great Florentine and Roman masters lasted with no other change than that of increasing mannerism or insipidity, till beyond the middle of the sixteenth century, about which time the followers of

the elder Zuccaro in Rome and those of Bronzino in Florence may be ranked with the Fontanas and the Passerottis of Bologna. The characteristic excellence of the Venetian school had been occasionally blended with the other styles, but in general the influence of each was separate and exclusive: meanwhile, owing to the ascendancy of the two first, the imitation of Correggio can hardly be said to have extended uninterruptedly beyond his own date, since Parmigiano, who indeed rather holds the rank of an original master, survived him but a very few years. Barocci may therefore be considered to have led the way, about 1565, not only in including Correggio among the great models proposed for imitation, but even in preferring him to the rest. The example thus set to the Roman school was followed soon after by Cigoli in Florence, viz. about 1580, a period which immediately precedes the dawning influence and fame of the Caracci. They too, from whatever cause, partook of the new admiration, and in their attempt to unite the excellences of the different schools, it was natural that a style, which had been hitherto in a great measure overlooked, should form a chief element of that eclectic perfection which was proposed as the object of attainment. Accordingly, the imitation of Correggio preponderates in the first works of these masters; and Annibale Caracci's letters from Parma prove that, like many other painters of the day, he considered the excellence of Correggio as a new discovery.

Lodovico Caracci, who had studied in Venice, Florence, and Parma, conceived the plan of introducing a new style, according to his biographers, when alone and unassisted, and it is said that he persuaded his younger cousins Agostino and Annibale to devote themselves to painting in order to aid him in effecting his purpose. He sent them, after well-grounded elementary studies, to Parma and Venice, from the latter of which schools it may be observed the Bolognese painters seem to have borrowed least. The first work of importance done after their return to Bologna was a series of compositions, representing the story of Jason, in an apartment of the Palazzo Fava: Lodovico himself assisted, but the greater part was the work of Annibale. The severe criticisms and opposition which this performance excited induced the Caracci to strengthen their party, and the famous school was opened which shortly attracted most of the rising painters who were studying with Denis Calvart, Cesi, and Fontana:—ample details as to the mode of study in the school of the Caracci may be found in Malvasia. The fame of these masters was soon after firmly established by their works; and Agostino, as an engraver as well as a painter, contributed to spread and sustain their name: but the enmity of the abettors of the old style was not completely silenced till the frescoes in the Palazzo Magnani were executed. Denis Calvart was the last to fall in with the general approbation; and it appears from Malvasia that his chief objection to the new mode of study was the constant reference to nature which was now deemed indispensable: from this objection the previous state of the schools and the manner of the painters of Bologna may be inferred.

Annibale Caracci repaired to Rome shortly before 1600, and painted in various churches; but his great work, the monument of his powers, and the specimen of the school most frequently quoted, although not perhaps the most characteristic, is the series of frescoes in the Farnese palace. In this work Agostino among others assisted: the Cephalus and the Galatea, according to Bellori, were painted entirely by him. The admirers of the antique and of the Roman school prefer this work even to Lodovico's performances in Bologna: Poussin and other painters, who visited Rome early in the seventeenth century, gave it the highest praise.

The followers of Lodovico at Bologna were however true to the founder of the school: posterity seems to have confirmed the opinion, and to have decided that this great painter, with less academic power than Annibale, is more original in style. Sir Joshua Reynolds thus speaks of Lodovico Caracci: "His unaffected breadth of light and shadow, the simplicity of his colouring, which, holding its proper rank, does not draw aside the least part of the attention from the subject, and the solemn effect of that twilight which seems diffused over his pictures, appear to me to correspond with grave and dignified subjects better than the more artificial brilliancy of sunshine which enlightens the pictures of Titian."

The principles and practice of the Caracci and their scholars superseded for a time every other style in Italy, yet it

may be remarked that the efforts of Lodovico can hardly be considered so spontaneous and independent as the historians of art have commonly asserted. It has been already shown that a new impulse had manifested itself in the Roman and Florentine schools even previously to the revolution which the Caracci effected; and whatever may have been the origin of that impulse, the sudden rise of various and powerful talents in Bologna may be considered a symptom rather than the cause of general improvement.

Among the numerous scholars of the Caracci, Domenichino holds the first rank; but the merit of this painter was long unnoticed in Rome, where he resided some time, owing in some degree to the intrigues of his rivals. Poussin had the honour of bringing some of his best works into notice, and declared him to be, in his opinion, the greatest painter after Raphael. By some modern critics, too, he has been preferred to the Caracci themselves: his chief excellence, and that in which he approaches Raphael, is his expression. The graceful Albani, who left the school of Calvart for that of the Caracci, perhaps like Domenichino imbibed his taste in landscape from the Fleming: he communicated it to Francesco and Giovanni Battista Mola, who often suffered it to predominate in their own historical works, and who occasionally painted the landscape backgrounds to the figures of Albani: these consisted frequently of females and children in subjects connected with poetry or allegory, and he excelled in them perhaps more than in sacred subjects. The more brilliant talents of Guido excited the jealousy of the Caracci from the beginning. Lodovico encouraged Guercino as a rival to him, and Domenichino was put forward, it is said, for no other reason, by Annibale in Rome. The light and silvery tone which is observable in some of Guido's best works is said to have been owing to an accidental expression of Annibale Caracci, who at a time when the dark style of Caravaggio excited general attention, and was imitated among others by Guido himself, remarked that the opposite treatment, with appropriate subjects, would perhaps be still more attractive. Caravaggio, who was born in the Milanese, and painted in Rome, Naples, and elsewhere, cannot be placed in the Bolognese school, which however he greatly influenced: he belongs to the successful innovators who, at the close of the sixteenth century, sought to oppose literal and unselected nature to the insipid imitation of the purer styles, and may be considered the chief representative of a class of painters called by the Italians the *Naturalisti* and the *Tenebrosti*. Among the painters of the Bolognese school Guercino, born at Cento, seems to have been most smitten with the vigorous effects of Caravaggio, although in his latest practice he acknowledged the charm of Guido's style by attempting to unite it, perhaps with little success, to his own. His dark pictures are generally his best, and he sometimes united the higher qualities of expression and of form with the magic of his relief. Both Caravaggio and Guercino studied in Venice, and the former particularly aimed at the style of Giorgione; yet their works, however admirable, present but few traces of Venetian principles, and this is to be accounted for by the spirit of innovation which manifested itself in every branch of the art, and which took the opposite of the vices of the day. The negative and somewhat heavy colour of the two masters alluded to was opposed to a florid and weak imitation of the colourists, the excesses of which are ridiculed by Boschini in his 'Carta del Navegar Pittresco.'

Lanfranco, born at Parma, was another distinguished scholar of the Caracci, and assisted Annibale in the Farnese palace in Rome: his own great work, the cupola of St. Andrea della Valle in the same city, is the best specimen of his powers, and it is here that as a machinist (the term applied by the Italians to painters of large compositions on ceilings and in galleries) he aimed at the grandeur of manner and boldness of foreshortening which he had long studied in the works of Correggio at Parma.

Of the remaining disciples of the Caracci it may be sufficient to mention the names of Tiarini, Lionello Spada, and Cavedone. All the more noted scholars before mentioned had numerous followers, and perhaps none more than Guido. In these the manner of the respective masters naturally degenerated, and no new talent arose. The taste in landscape which the Caracci introduced or improved was inherited and almost exclusively practised by Giovanni Battista Tiepolo, the Grimaldi, and others: the most perfect specimens of this branch of art, as practised in the school, are however to be sought in the works of Domenichino and Annibale Caracci.

About the year 1700 the greatest name was Carlo Cignani, a painter of considerable repute in his day, and who so far revived the principles of the school that he professed to unite the anatomical science of Annibale Caracci with the more attractive qualities of Correggio. Under his auspices the Clementine Academy of Bologna was instituted to preserve as much as possible the acknowledged principles of the art, and to point out the best models for imitation. But while the impulse which the Caracci and their scholars had communicated to the school was gradually exhausting itself, a pernicious and in many respects opposite tendency had been gaining ground. The specious facility and consequent popularity of the machinists who imitated Vasari in Florence and the Zuccari and Arpino in Rome had been with difficulty opposed by the united efforts of the Caracci, and appear to have been the chief causes of the neglect of Domenichino. This empty facility, no longer contrasted with such distinguished talents, was naturally considered the highest proof of ability, and by degrees almost extinguished the taste for well-studied imitation. A Bolognese writer and painter, Zanotti, who was long professor of the Clementine Academy, was one of the first to raise his voice against this destructive mannerism, and to recommend a more frequent reference to nature. He has been considered to have led the way to opinions far more decided than his own as to the necessity of returning to the first principles of imitation, and indeed to the methods of the earliest masters. These notions have been openly expressed in Germany, where the writers on art, allowing for some exaggeration in their views, have had the merit of directing the attention of the world of taste to the simple but impressive productions of the older Italian painters, from whom Raphael caught the feeling which aided him in his study of nature.

To recapitulate, the school of the Caracci has been often described as merely imitative, but perhaps this has arisen rather from the well-known and professed object of its instructors and followers than from a particular evidence of that object in their productions. If a certain resemblance of manner, whatever it be derived from, characterise the masters, it may be admitted that no school presents so much variety as is to be met with in the works of their disciples. This, it must be confessed, cannot be said of the followers of Michael Angelo and Raphael. The example of an eclectic style may thus lead to a more original style, whereas the example of an original style, if it cannot be surpassed, can only end in a weaker copy. Yet assuming that the Caracci were as independent of the spirit of their age and as free to choose their path as their biographers would lead us to suppose, had they endeavoured to follow up the feeling of Francia (not to return to Lippo Dalmasio or to Giotto), they might have succeeded in connecting the highest effort of the school with that earlier, national, or local style, which, as we have seen, was nipped in its growth before it was fully developed, partly perhaps because Francia devoted himself so late in life to the art, and thus still adhered to the incomplete and, as it were, preparatory mode of imitation when the perfect one had already been introduced. The merit of this painter, as one of the characteristic Italian masters, should not however be forgotten, and his style is not the less interesting from being connected with that original school of Umbria, distinct from the Florentine, which was remarkable for purity of expression, and which had so much influence on the education and genius of Raphael.

BOLOGNIAN PHOSPHORUS. [PHOSPHORUS.]

BOLOGNIAN STONE, a variety of sulphate of barites. [BARIUM.]

BOLOR, or **BELUR TAGH,** a name on all our maps, down to the latest, given to the extensive mountain-range which encloses the high table-land of eastern Asia on the west, and separates it from the deep depression which surrounds the sea of Aral on all sides and the Caspian on three. This name, we believe, is first found on some Russian maps made in the beginning of the last century, and afterwards adopted by D'Anville in his Atlas of the Chinese empire, since which time it has been continued. But as this name is not known in the countries contiguous to the range, at least not in those of which we have obtained any information, it may be asked whence it is derived. It is found to rest on the authority of Marco Polo, the Venetian traveller, and on that of the Arabian geographer Nasir Eddin. But on examining the passages in which these

authors speak of Bolor, it is evident that the name is not properly applied to this range, and it is uncertain whether it can be applied to any mountain-range at all. Marco Polo, after leaving Badakhshan, or Balascia, and traversing a country called Vocam, arrives at the highest mountains in the world, and having passed them, to the table-land of Pamer. Travelling from it in a north-eastern direction, for forty days, over a mountain-region of great extent and elevation, he adds that this country was called Belor. Afterwards he arrives at Khashghar. But Nasir Eddin evidently gives the name of Belur to a place which, according to his determination, lies 3° 36' E., and 10' S. of the town of Badakhshan. Mr. Erskine, in his introduction to the history of the Emperor Baber (xxvii. note), was the first who observed that there was a variance between Marco Polo and Nasir Eddin, and a still greater between them and our maps. Julius Klaproth, at a later date, compared the passages of Marco Polo with the great Chinese map, and found the name of Bolor inserted on it not far south of the position which Nasir Eddin has assigned to Belur. To reconcile the passage of Marco Polo with the position of Nasir Eddin and the Chinese map, Klaproth reasonably supposed that the first part of Marco Polo's route had been towards the east, and that consequently Belor and Bolor mean the same place. The opinion of Klaproth has been adopted by Ritter, and the respective positions of the places have been inserted on Grimou's 'Atlas von Asien.' As we think that this determination is well founded, and that consequently the name of Bolor will disappear from the place which it now occupies in our maps, we do not describe that mountain-range which lies between 40° and 35° N. lat. on both sides of the meridian 72° E. of Greenwich under this name of Bolor, but under that of **TARTASH TAGH,** the name by which it is known among the natives. The Chinese map gives it the name of Tartash-i-ling.

BOLSE'NA, a town in the papal state, in the province of Viterbo, situated on the slope of a hill near the northern bank of the lake of Bolsena. It is an old decayed-looking town, rather unhealthy in summer, with about 1500 inhabitants. Bolsena is near the site of the antient Volsinii, one of the principal cities of the Etruscans, which sustained several wars against Rome, and, owing to its strong position, maintained its independence after the rest of Etruria had been conquered. But the citizens of Volsinii in the pride of wealth and security, having become addicted to indolence and pleasure, emancipated their slaves, and entrusted them with arms for the defence of the town, and even admitted them into the senate. By degrees the liberti or freedmen, becoming possessed of all the power in the state, tyrannized over their former masters, held their persons and property at their mercy, and violated the honour of their wives and daughters. The citizens secretly sent deputies to Rome imploring assistance. A Roman army, under the Consul Fabius Gurgus, marched against Volsinii, and defeated the revolted liberti, but the consul was killed in the engagement. A new consul, M. Fulvius Flaccus, was sent from Rome, who after a siege took Volsinii, B.C. 266. Most of the revolted liberti were put to death, but at the same time Fulvius Flaccus razed the city which had so long withstood the power of Rome. He carried away the spoils, among which it was said there were 2000 statues, a number evidently exaggerated. (See Livy's narrative of this event, with Niebuhr's remarks upon it, *Römische Geschichte*, 3rd vol.) The inhabitants built themselves a new town in the neighbourhood. This new Volsinii is little noticed in subsequent history. Sejanus, the favourite of Tiberius, was a native of it. The Via Cassia passed through Volsinii. Among the few remains of antiquity at or near Bolsena are some ruins of a temple, said to have been dedicated to the Etruscan goddess Nursia. Two antient urns are in the vestry of the church of Santa Cristina, and in the place before the church is another urn with curious basso-relievi, representing satyrs and bacchantes, and near it is likewise a large and elegant vase of oriental granite. It is in the church of Santa Cristina that the miracle of the bleeding host is reported in the old legends to have occurred, which furnished Raphael with the subject of one of his finest paintings in the Vatican. Bolsena is 56 miles N.N.W. of Rome, on the road to Florence.

BOLSE'NA, THE LAKE OF, is in shape nearly oval and covers about seventy square miles. It is almost wholly surrounded by hills, which are covered with trees.

vines, and gardens. To the south-east the town of Montefiascone rises on a conical hill a short distance from the lake, and from the summit there is a splendid view of the surrounding country. To the eastward, behind the town of Bolsena, is the calcareous ridge of Bagnorea and Orvieta, which divides the basin of the lake from the valley of the Tiber. [BAGNOREA.] South-west of the lake, the country opens into the unwholesome plains which extend towards the sea. At this end, the river Marta (*Lartes flumen*) issues out of the lake, and after a course of about forty miles enters the sea near Corneto. The lake is subject to overflows; it is in many places shallow near its borders, where it is covered with reeds and frequented by multitudes of water-fowl. The air around the lake is unhealthy in summer, though not so deleterious as that of the plains towards the sea. The lake of Bolsena abounds with fish and large eels, which were celebrated in the time of Dante. (*Purgatorio*, xxiv. 22.) Two small islands rise out of the lake, *Isola Bisentina* and *Isola Martana*. It was in one of these islands, some say the Martana, and others the Bisentina, that Queen Amalasonta, daughter of Theodoric, the Gothic king of Italy, was confined, and died a violent death. After her father's death she became regent of the kingdom, during the minority of her son Athalaric, who dying prematurely, Amalasonta took for her colleague in the cares of the kingdom her cousin Theodatus, who soon after confined her in the island on the lake of Bolsena, where she was strangled in 535. Theodatus was himself shortly after put to death by Vitiges. The hills that surround the lake of Bolsena are basaltic; but the rock in most places has a covering of rich mould, though in others it is bare and shows hexagonal prisms ranged in all lines of directions, vertical, horizontal, and oblique. The country produces very good wine, both red and white, especially of the muscat kind.

BOLSOVER, a parish and formerly a market-town in the hundred of Scarsdale, county of Derby, 23 miles N.N.E. from Derby and 130 miles N. by W. from London. At the time of the Domesday Survey the manor of Bolsover (*Belesovre*) belonged to William Peveril, who is supposed to have built Bolsover Castle. Not long after the forfeiture of this property by William Peveril the younger for poisoning Ralph Earl of Chester, in 1153, we find the castle mentioned as having been given with the manor by Richard I. in 1189, to his brother John on his marriage. The castle was in the possession of the barons in 1215, but was taken from them by assault for the king (John) by William de Ferrers, Earl of Derby. The manor and castle continued sometimes a direct property of the crown, and at other times it was in the possession of various nobles under grants from the crown. The Earl of Richmond (father of Henry VII.) died possessed of it in 1456, together with the Castle of Hareston, both of which were granted in 1514 to Thomas Howard Duke of Norfolk, on the attainder of whose son it again reverted to the crown. Edward VI. granted it to Talbot Earl of Shrewsbury, in whose family the manor of Bolsover continued until the time of James I., when Earl Gilbert sold it to Sir Charles Cavendish. The old castle was in ruins long before. Leland mentions it as in ruins in his time, and no vestige of it now remains. That which is now called the castle is nothing more than an ill-contrived and inconvenient domestic residence with somewhat of a castellated appearance. It was begun, immediately after he made the purchase, by Sir Charles, who appears to have removed on the occasion what remained of the old castle. It is a square, lofty, and embattled structure of brown stone with a tower at each angle, of which that at the north-east angle is much higher and larger than any of the others. The building stands on the brow of a steep hill overlooking a large extent of country. A flight of steps on the east side leads through a passage to the hall (the roof of which is supported by stone pillars), and thence to the only room designed for habitation on this floor. This apartment, called the 'pillar parlour,' is 21 feet square, and has an arched ceiling which is supported in the centre by a circular pillar, around which the dining-table is placed. Above stairs there is a large room, about 45 feet by 30, called the 'star chamber;' there are also a smaller apartment and two lodging-rooms on this floor and eight on the attic story, which are all very small: the floor of every room is of stone or plaster. The residence of the family of Cavendish was probably in the magnificent range of ruined apartments which extend to the west of the structure we have men-

tioned, and of which only the outside walls are now standing. In front of this mansion there was a fine terrace, from which a magnificent flight of steps led to the entrance. The gallery in this fine range of apartments was 200 feet in length by 22 in width; the dining-room 78 feet by 32; the two drawing-rooms are 39 feet, the other 36 feet by 33. Dr. Pegge, Horace Walpole, and others, thought that these buildings were erected after the Restoration by William Cavendish Duke of Newcastle, son of the Sir Charles, who built what is called the castle. Diepenbeck's view of Bolsover (1652) however decides the point of their previous existence, and that they were built before the civil wars is more than probable, as otherwise there would have been no room at Bolsover for the splendid entertainment which the Earl of Newcastle (such was then his rank) gave to King Charles, with the queen, the court, and 'all the gentry of the county.' The earl had previously entertained the king at Bolsover in 1633, when he went to Scotland to be crowned. The dinner on this occasion cost 4000*l.*; and Clarendon speaks of it as 'such an excess of feasting as had scarce ever been known in England before.' In the early part of the civil war the castle was garrisoned for the king, but was taken in 1644 by Major-General Crawford, who is said to have found it well manned and fortified with great guns and strong works. During the sequestration of the Marquis of Newcastle's estates, Bolsover Castle suffered much both in its buildings and furniture, and was to have been demolished for the sake of its materials, had it not been purchased for the earl by his brother, Sir Charles Cavendish. The noble owner repaired the buildings after the Restoration, and occasionally made the place his residence. It now belongs to the Duke of Portland, whose family derived it in the female line from the Newcastle Cavendishes. Although still inhabited, the mansion has long ceased to be even occasionally occupied by its owners.

The small town or village of Bolsover is pleasantly situated, together with the castle, upon a point projecting into a valley which surrounds it on every side except the north-east, where the separation has been made by a deep cut. The number of houses in the parish, which includes part of the township of Gapwell, amounted to 320 in 1831, and the population to 1429, of whom 695 were females. The inhabitants are chiefly employed in agriculture. The parish church, dedicated to St. Mary, is of a mixed architecture, having portions of the Norman style intermixed with later English architecture and with some modern additions. The living is a discharged vicarage in the diocese of Lichfield and Coventry, with the annual net income of 111*l.* There is a small charity school, endowed with 6*l.* per annum, said to have been given by the Countess of Oxford; the school-house was erected in 1756. The interest of nearly 3000*l.*, bank annuities, bequeathed by Mrs. Smithson in 1761, is applicable to the assistance of the poor at the discretion of the minister, churchwardens, and four trustees. (*Pegge's Sketch of the History of Bolsover and Peak Castles; Bray's Tour into Derbyshire; Pilkington's Present State of Derbyshire; Lysons's Magna Britannia.*)

BOLTE'NIA (zoology), a subgenus of *Ascididæ*, a family of the group Tunicata, which, according to William Sharp MacLeay,* are the animals that connect the *Acrita*, or lowest primary division of the animal kingdom, with the Mollusca, from which, he observes, they differ in the following points: First, in having an external covering consisting of an envelope distinctly organized and provided with two apertures, of which one is branchial, the other anal. Secondly, in their mantle forming an internal tunic corresponding to the outer covering or test, and provided like it with two openings; and thirdly, in having branchiæ which occupy all, or at least part, of the membranous cavity formed by the internal sides of the mantle. From the *Acrita* the Tunicata (or Heterobranchiata, as De Blainville calls them) differ in having distinct nervous and generative systems, while their intestinal canal is provided with two openings, both internal. [TUNICATA.] MacLeay, in his excellent 'Anatomical Observations on the Natural Group of Tunicata,' after referring to the investigations of Cuvier, bestows well-merited praise on the 'inimitable labours' of Savigny, and censures De Blainville for his obvious wish to obliterate them. He well observes, that dissection must

* 'Anatomical Observations on the Natural Group, of Tunicata, with a description of three species collected in Fox Channel during the late North-west Expedition,' by William Sharp MacLeay, Esq., A.M., F.L.S.—*Trans. Linn. Soc.* vol. xiv, p. 557.

always be resorted to when we wish to understand the character of the Tunicata, whether simple or compound; and adds, that the naturalist who contents himself with describing the external appearance of an *Ascidia* may remain even more ignorant of the nature of the inclosed animal than that person is of Mollusca who knows no more of them than the shells they inhabit. The following is the generic character of *Boltenia* (Savigny) as reformed by MacLeay for satisfactory anatomical reasons, detailed in his memoir, every word of which is worthy of the deepest attention of the comparative anatomist.

External character.—Body with a coriaceous test, supported from the summit by a long pedicle, and having both orifices lateral and cleft into four rays.

Anatomical character.—Branchial pouch divided into longitudinal folds, surmounted by a circle of compound tentacula, and having the reticulation of its respiratory tissue simple; abdomen lateral; ovary multiple.

There are three species recorded, viz. *Boltenia ovifera*, *Boltenia funiformis*, and *Boltenia reniformis*. We select the latter, *Ascidia globifera* of Captain Sabine, *Ascidia clavata* of Otho Fabricius, as an example of the subgenus. The following is MacLeay's character and description.

Specific character.—Obscure, roughish; body subreniform, the orifices being somewhat prominent; peduncle terminal.

Description.—Envelope sub-pellucid, whitish; mantle or tunic very thin, provided with transverse, circular, narrow muscles, which cut each other very obliquely.

Tentacula about ten or twelve in number, very unequal, clavate, with the clava plumiform or beautifully divided into a number of regular laciniae.

Branchial pouch marked with about fifteen or sixteen large folds, and having the net-work simple and regular as in the *Cynthia momus* of Savigny. [CYNTHIA.]

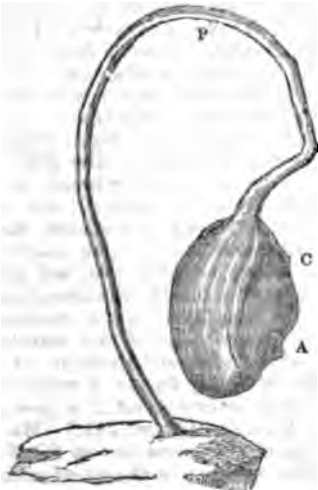
Dorsal sulcus having the two lateral filaments winged and the intermediate simple.

Oesophagus descending vertically to the lower end of the body, as suspended, and there meeting an ascending ovoid stomach without any apparent internal folioli.

Intestine with an oblong, longitudinal, open loop, which is prolonged to the pedicle; **rectum** narrow and sub-conical, and ascending nearly parallel to the oesophagus, only higher; **anus** having a scoloped margin.

Liver coating the stomach behind the right ovary, and running from the lower end of the body, as suspended, about half way up. It is divided into several granulated globes, some of which are separated from the others, particularly towards the pharynx.

Ovaries two, elongate, lobate, situated on each side of the body, and directed towards the anal orifice; **right ovary** straight, claviform, lying close within the loop of the intestine; **left ovary** larger and less lobate, but undulated and extending downwards behind the branchial vein.



[*Boltenia reniformis*.^{*}

P, pedicle; C, branchial orifice of envelope; A, anal orifice of envelope.

* The cut is taken from the figure given by Mr. MacLeay, who observes that the specimen was probably contracted by being in spirits, as the situation of the loop of the intestine is indicated by a corresponding elevation of the envelope.

MacLeay, after quoting Captain Sabine (Appendix to Parry's *Voyage to Melville Island*) and Fabricius (*Fauna Groenlandica*), gives the northern seas of America as the locality of the animal. Captain J. C. Ross (Appendix to Sir John Ross's *Second Voyage*) says that a single specimen was dredged up from a depth of seventy fathoms near Elizabeth Harbour. He observes that he can add nothing to Mr. MacLeay's admirable description, except that the colour of the body is a very light brown; that of the pedicle darker.

The sphere wherein this Ascidian moves must necessarily be very contracted. Anchored by its pedicle, the length of its moorings fixes the limit of its motions, which are most probably confined to the oscillations arising from the agitation of the waves. Both the body and pedicle, as MacLeay observes, are scabrose or covered with a rough surface, which is formed by exceedingly short coarse hairs. The original colour he could not ascertain; but in spirits it was cinereous or dirty white, which, he adds, may possibly be the true colour of the animal, as it is not unfrequently that of the other ascididae. MacLeay's specimen was brought home from Winter Island by William Nelson Griffiths, Esq., while under the orders of Captain (now Sir Edward) Parry.

BOLTHEAD, a chemical vessel, usually of green glass, and of a globular form, with a narrow neck. It is chiefly employed in the process of sublimation.

BOLTON-LE-MOORS, a borough town in the populous parish to which it gives name, in the hundred of Salford, county palatine of Lancaster, comprising the township of Great Bolton, and the chapelry of Little Bolton; 11 miles N.W. of Manchester, 6 miles W.S.W. of Bury, 12 miles S. of Blackburn, 11 miles S.E. of Chorley, 43 miles S.S.E. of Lancaster, and 197 miles N.W. by N. of London. It is in 53° 33' N. lat., and 3° 34' W. long.

The parish of Bolton contains twelve townships and six chapelries, of which the following is a list, with the estimated annual rental of the lands, &c., of each:—

	Population	Estimated Value
Anglezarke, township	168	£975
Blackrod, chapelry	2,591	4,618
Bolton, Great, township	28,299	27,887
Bolton, Little, chapelry	12,896	11,747
Bradshaw, chapelry	773	2,166
Brightmet, township	1,026	2,307
Edgworth, township	2,168	2,989
Entwistle, township	701	1,684
Harwood, township	2,011	2,492
Lever, Darcy, chapelry	1,119	1,378
Lever, Little, township	2,231	2,611
Longworth, township	179	545
Lostock, hamlet	606	1,668
Quarleton, township	376	1,327
Rivington, chapelry	537	2,650
Sharples, township	2,589	3,228
Tonge with Haulgh, township	2,201	2,632
Turton, chapelry	2,563	4,193
Total	63,034	£77,097

The increase in the population of the town of Bolton has been very rapid since the year 1773, when there were only 5339 inhabitants in the two townships. In 1801 they amounted to 17,416, in 1811 to 24,149, in 1821 to 31,295, and in the census of 1831 they are returned at 41,195, showing an increase in 58 years of 35,856 persons. The returns for the whole parish during 30 years preceding the year 1831 exhibit a proportionate increase. In 1801 the parish contained 29,826 inhabitants; in 1811 this number was raised to 39,701, in 1821 to 50,197, and in 1831 to 63,031. The tables drawn up at the last census exhibit the following particulars connected with the population of this borough:—

	Houses.	Families	Families employed in agriculture.	Families employed in trade, manufactures, & handicraft.	Other families not comprised in these two classes.	Males.	Females.	Total.
Great Bolton	5041	5637	18	5839	370	12,911	14,388	27,299
Little Bolton	2441	2583	36	3049	497	6,376	6,820	12,896
Total	7482	8220	54	7288	867	20,187	21,008	41,195

The boundaries of the borough, as laid down in the Boundary Act, 2 and 3 Will. IV. cap. 64, are not the boundaries of the town: a portion of Little Bolton lying to the north of Astley Bridge, and extending as far as Horrocks's Fold, is excluded from the franchise, and the small adjoining township of Tonge with Haulgh is included in it. The borough returns two members to parliament.

The name of Bolton is involved in obscurity, though its affix of *le Moors* evidently points to a Norman origin, and affords proof of the early importance of the place, which required to be thus distinguished from other towns of the same name. If, as it has been supposed, Bolton is a corruption of Bodelton or Bothelton, a town which is mentioned in the 'Calendarium Rotulorum Chartarum' preserved in the Tower of London, the manor belonged at the time of the Conquest to Roger de Merscheya, by whom it was sold, along with his other lands between the Ribble and the Mersey, to Ranulf de Blunderville, Earl of Chester, from whom it came into the possession of the Earl of Ferrers, and from him to an ancient Lancashire family of the name of Pilkington. In the possession of this family the manor remained for nearly a century, until Sir Roger Pilkington, then high sheriff of the county, was attainted and beheaded at the commencement of the reign of Henry VII., for adhering to the cause of Richard III. at the battle of Bosworth field. His estates were confiscated and given to Sir Thomas Stanley, then created Earl of Derby. In this way the Earl of Derby became possessed of nearly all the land in the town of Bolton, which he held until part of it was again confiscated during the Commonwealth, in consequence of the conduct of the Earl of Derby in the civil commotions of those times. By a series of mutations, not easily traced, the manorial rights became divided among several individuals, by whom they are still held. The earls of Derby and Bradford have each one-third part, two other individuals have each one-twelfth, and a fifth party holds one-sixth. The manor of Little Bolton is in the possession of Thomas Tipping, Esq.

During the political dissensions in the reign of Charles, Bolton began to rise into notice, owing to the ardent spirit manifested by the inhabitants in favour of the Commonwealth. During the long strife between the royalists and the parliamentarians the town was garrisoned by the latter, in whose possession it remained till 1644. After Prince Rupert's successful attack upon the parliamentary troops who besieged Lathom House, the then residence of the Stanley family, finding that they took refuge in Bolton, he followed them with his army, where, being joined by the earl of Derby, he attempted to take the town by storm. After several assaults the royalists, being repulsed with great loss, retired, until the earl of Derby, having collected his tenantry and levied new troops, returned to the attack, and succeeded in dislodging the parliamentary forces, and obtaining possession of the town. It did not remain long in their hands, for by one of the singular vicissitudes of those eventful times it was again surrendered to the parliament; and after the battle of Worcester the unfortunate earl, who had signalized himself in the attack upon Bolton, being taken prisoner, was condemned by a military tribunal at Chester, and sent under an escort to Bolton, where he was beheaded October 15th, 1651.

Several centuries prior to this date the town was famous for its manufactures. Leland speaks of its being a market for cottons and coarse yarns; and another writer (Blome), who wrote somewhat later, describes it as 'a fair well-built town, with broad streets, with a market on Mondays, which is very good for clothing and provisions; and it is a place of great trade for fustians.' There seems to be little doubt that the making of woollens was imported by some Flemish clothiers, who came over in the fourteenth century; that other branches of trade were introduced by the French refugee manufacturers, who were attracted by the prosperity of the neighbourhood; and that the manufacture of cotton cloth was improved, and in many of its kinds introduced, by some emigrant weavers, who came from the palatinate of the Rhine.

Bolton made no great advances in population until the improvements in the machinery for spinning cotton gave an impetus to the trade, which has been gradually increasing ever since. Almost the first invention in point of importance originated in this town. It was a machine which combined the principles of the spinning-jenny and the water-frame, and was called from that circumstance

a *Mule*. This was the discovery of a man of the name of Samuel Crompton, who lived in a part of an interesting old house about a mile from Bolton called 'Hall in the Wood,' where the experiments were carried on which resulted in this valuable invention. Fortunately for the public, but unfortunately for the inventor, no patent was taken out for the machine. It consequently came into immediate use, and made the fortunes of thousands, while the ingenious discoverer, after receiving the product of two subscriptions of 105*l.* and 400*l.*, raised with difficulty from those whom his invention had enriched, was remunerated by a parliamentary grant of 5000*l.* In the mean time Sir Richard Arkwright, another native of Bolton, who had risen from a very obscure condition, had established large factories in Derbyshire, where he carried the cotton machinery to the greatest perfection. The opposition made by the labouring classes in Bolton to the improvements in machinery has, at various times, driven the most lucrative branches of employment from that town to other places. The introduction of the mule and of the power-loom was not accomplished until they had enriched other communities for some time. After a while cotton factories began to rise up in various parts of the town, filled with machinery upon the best principle. Foundries and machine manufactories followed them, and a great extension was immediately given to the trading interests of the place. Some of the largest mills in the county are in Bolton. Two of the principal spinners have each more than 100,000 spindles employed, and there are nearly fifty factories in the town and the immediate neighbourhood. The cotton manufacture which is carried on in these mills, comprehending the dressing and carding of the raw material, and the spinning it into yarn, employs steam-power equivalent to about 1100 horses. About fifty steam-engines are used in the spinning-mills alone. At seven persons to one horse power (which is Baines's calculation) there would therefore be 7700 persons, old and young, engaged in the mills alone in Bolton. But this average is taken too high; five would be more accurate, giving a total of 5500, which corresponds very nearly with the returns. In 1831 the whole number of men employed in the cotton and silk trade in the townships of Great and Little Bolton was 6100. The women and children would quadruple the number.

The weavers of Bolton produce a great variety of fabrics, probably a greater variety than any other single place in the county. Plain and fancy muslins, quiltings, count r-panes, and dimities, are the chief kinds of cloth, but cambrics, ginghams, &c. are also woven. Formerly fustians, jeans, thicksetts, and similar fabrics, were the principal articles made in the town, but these descriptions of cloth are now chiefly produced in the power-loom, as well as calicoes and dimities. Silk goods are not produced here to any extent. Several attempts have been made to introduce them among the Bolton weavers, but without much success.

The bleach works in the town and neighbourhood are among the largest in the kingdom, and employ a considerable number of persons, ten millions of pieces being the average number annually bleached in the parish of Bolton. The steam-power used in these works is calculated to be equal to the power of nearly 500 horses.

In the foundries it is nearly as great, twenty-five steam-engines being employed in them. The iron foundries and machine shops in Bolton are numerous and extensive. Steam-engines are made at several of them, and, together with the machinery that is manufactured here, are considered of the first quality.

Many other branches of trade connected with the above are carried on to a considerable extent; and there are several large chemical and paper-works in the town and its vicinity.

A great proportion of the cotton goods manufactured here are sold in Manchester, where the manufacturers have warehouses for the storing and sale of their cloths. They meet their customers there from all parts of the country, one, two, or three days of each week, but always on Tuesday, which is the cotton market day in that metropolis of the cotton trade. On that day all the principals or their representatives from every establishment in the county connected with the cotton trade, more particularly bleachers and manufacturers, meet in Manchester. The practice, though apparently inconvenient, and certainly attended with much trouble, has so many advantages that there is no wish, even among those who are most remote from the market, to alter it.

Bolton is well accommodated with the means of conveyance to all parts of the kingdom. Being on the direct line of the north road from Manchester, coaches are constantly passing through it in that direction. The intercourse with Manchester, already very easy and frequent, will be rendered much more so by the new rail-road which is being laid (1835) between the two towns, the completion of which is expected in the course of a year. There is also a railway, which was opened in 1831, connecting Bolton with the Manchester and Liverpool line at Kenyon, by which passengers are conveyed to either of the two great towns. The distance by it to Liverpool is thirty-two miles, to Manchester twenty-two miles. The advantages of inland navigation have been enjoyed since 1791, when a canal was made from Manchester to Bolton, with a branch to Bury. It begins on the western side of Manchester from the river Irwell, to which it runs nearly parallel, crossing it at Clifton, and again near Little Lever, where its two branches to Bolton and Bury separate. Its whole length is fifteen miles one furlong, with a rise of 187 feet. The two towns thus connected with Manchester, being on the same level, no lock is required between them. The distance by canal from Bolton to Manchester is twelve miles; from Bolton to Bury six miles.

The whole district through which the canal runs abounds with coal. The mines, though not perhaps so close to the town, appear to have been worked when Leland wrote his 'Itinerary.' He says 'They burne at Bolton sum canale but more se cole, of the wich the pittes bo not far off.' The principal mines for cannel coal belong to the earl of Balcarras, and are in the vicinity of Wigan: but some of an inferior quality is found nearer Bolton. The common coal lies round the town, and is the main source of its prosperity.

The two townships of which the borough of Bolton consists are separated by a small river called the Crole, which rises at Red Moss in the hamlet of Lostock, and runs due west into the Irwell, dividing in its course Great and Little Bolton, the south side of it being the township of Great Bolton, and the north side the chapelry of Little Bolton. Though an ancient town, the streets of Bolton are wide and straight, and the houses generally well built. The roads leading to and from the town in every direction are kept in good condition, and the principal entrances are good. The town covers nearly a square mile, having been very considerably extended in the S.W. direction, under an act of parliament obtained in 1792 for inclosing Bolton Moor, a large tract of waste land comprising nearly 300 acres, which was divided into allotments and sold by public auction on a perpetual chief-rent to be secured by buildings, and made payable to trustees appointed in the aforementioned act. A fifteenth part was deducted as a compensation to the lords of the manor, to whom were reserved also the mines and minerals underneath the surface. The powers of these trustees were extended by another act in 1817, by which they were empowered to raise a rate to the amount of 2s. 6d. in the pound upon the annual value of the property of the town for the purposes specified in a former act for lighting, cleansing, paving, and improving the town of Great Bolton. The many expensive improvements which were made previous and subsequent to the passing of the last act involved the trustees in expenses beyond the amount of their annual receipts from the Moor, which, united with a want of proper economy, rendered it necessary for them to get an enlargement of their powers, in order to obtain a mortgage upon the Moor rents. In this way they raised 12,000*l.*, to defray the interest of which, together with other demands, a police rate, varying from 1s. to 2s. 6d. in the pound, was annually laid upon the inhabitants, and paid for a number of years, until, in the year 1835, the tax was discontinued, and by a better administration of the funds yielded by the chief-rents on Bolton Moor, not only have they been found equal to defray the annual disbursements for the lighting, paving, cleansing, and improving the town, but, in addition, 2000*l.* of the debt has been discharged. The income of the whole property is 2500*l.*, 400*l.* of which is absorbed by the interest of the mortgage.

The powers of the trustees of Great Bolton, who are appointed under the Police Act, do not extend to the preservation of public order. Officers are annually selected at a court held called by the lords of the manor, in each township respectively, under the names of a boroughreeve, two constables, and a deputy-constable, in whom all authority is vested, during their continuance in office, for the preservation

of the public peace. The consequence of this mode of appointing such important officers is the same as in most other towns similarly situated,—a most inefficient police—an evil which is so strongly felt by the inhabitants, that it is likely they will seek to remove it by incorporating themselves under the provisions of the Corporation Reform Bill.

Little Bolton has a police act distinct from Great Bolton, which vests the appointment of a certain number of trustees annually in the rate-payers. The sum raised last year for the purposes of lighting, paving, and cleansing Little Bolton, amounted to 1918*l.* 5s. 10d., being 1s. 6d. in the pound upon the annual value. The parochial concerns of the two townships are each as separate as their municipal affairs, and in both are well managed. In Great Bolton, the sum collected for the relief of the poor was about 4000*l.*, being 2s. in the pound upon the annual value. In Little Bolton, during the same year, 1674*l.* 6s. 10d. was collected for the relief of the poor, being 1s. 6d. in the pound upon the annual value of the property in the township.

The town is well lighted with gas by a company incorporated in 1820. It is also admirably supplied with water, brought from a distance of four miles N.E. of the town. The springs are first collected in a large reservoir near their source, from which the water is conveyed in earthenware pipes into another reservoir, about a mile from the town, from whence it is again conveyed through an iron main of thirteen inches diameter to the various parts of the town. The water descends from an elevation of about 700 feet; but the elevation of the reservoir from which the inhabitants are supplied is not more than eighty feet, and is not found to give sufficient pressure to raise the water to the height at which it is wanted. The company are about to remedy this, by making another reservoir on a higher level, which will make the water available to all the purposes for which it is required. This undertaking was effected at an expense of 40,000*l.*, subscribed in shares of 50*l.* each, by a company established by act of parliament in 1824. The scale of charges is so moderate as to put it within the power of the poorest inhabitants to have the water brought into their own houses. Dwellings under 10*l.* are charged 16s. a year and houses of greater value one shilling in the pound upon the annual rent.

The churches and chapels, the exchange, news-room, and library, the dispensary, the workhouse, and the town-hall in Little Bolton, are the only edifices that can be considered as public buildings. Of these the large parish church, dedicated to St. Peter, is supposed to be several centuries old, but has few pretensions to architecture. It has a low tower, and is surrounded with a very extensive burial-ground. The living is a discharged vicarage in the deanery of Manchester, and in the archdeaconry and diocese of Chester, and is returned of the yearly value of 464*l.* in the Ecclesiastical Returns. Another church was recently erected in Great Bolton, at an expense of 13,412*l.*, part of which was defrayed by a grant from the parliamentary commissioners. It is a handsome building with a tower, in the English-Gothic style, and contains 923 free sittings. The living is a perpetual curacy in the gift of the vicar of Bolton. The largest church in Little Bolton, St. George's, a brick building, with a tower and bells, was built by subscription in 1796. The living is a perpetual curacy, to which the subscribers had three presentations, which are now exhausted, and it reverts to the bishop of Chester. There is also a chapel of ease in the same township, dedicated to All Saints, in the gift of Thomas Tipping, Esq., lord of the manor, which is also a perpetual curacy. It is endowed with 200*l.* private benefaction, 200*l.* royal bounty, and 2200*l.* parliamentary grant. The places of worship belonging to the dissenters in Bolton are numerous and spacious. There are two each for Baptists, Independents, and Unitarians, one each for the Society of Friends and Swedenborgians, a Roman Catholic Chapel, and seven places for the various denominations of Methodists.

The institutions for education in Bolton are numerous. The free grammar-school, contiguous to the parish churchyard, educates 120 boys. It was founded in 1641 by Robert Lever, citizen and clothier of London; and in 1651 an old school, of unrecorded foundation, was, with its revenue and property, united to it; since which time both have been considered as one school. The income is 485*l.* per annum, of which the head master receives a salary of 160*l.*, the second master 100*l.*, and the writing-master 75*l.* per annum.

The appointment of masters and the government of the school are vested in twelve governors, who supply vacancies in their number as they occur. No boys are admitted into the school except on the foundation, and they are all selected from the parish of Bolton. The children of dissenters are admitted if they are willing to conform to the rules of the school. The only payment is one shilling on entrance to the head master, who superintends the whole school, and has a class of thirty, who are instructed by himself chiefly in Latin and Greek. In the lower school the second master teaches English, geography, and the rudiments of Latin. The boys both in the upper and lower school attend the writing-master, and receive instruction according to their capacities in writing, arithmetic, algebra, and mathematics: French has been discontinued. The boys learn the Church Catechism and read other religious books, principally selected from those published by the Christian Knowledge Society. Among the masters who have presided over this school are Robert Ainsworth, the compiler of the Latin dictionary, and Dr. Lempriere, the author of the 'Classical Dictionary.'

At another school, endowed by Mr. Nathaniel Hulton, in School-street, Moor-lane, 120 boys and 80 girls are instructed in reading, writing, arithmetic, and geography, and the girls in sewing, on the system of the British and Foreign School Society. It was not founded by the testator, but established in 1794, by his trustees, in compliance with his will, out of the surplus proceeds of money bequeathed for other purposes. The children pay a small sum weekly towards their education.

Marsden's and Popplewell's Charity-school, in Church-ate, was founded in 1714, for teaching twenty children, boys and girls, reading and the church catechism, without any charge. Mrs. Susannah Brookes left a further sum to instruct twelve more in the same manner, and latterly another considerable bequest has been received from the executors of the late Mr. Popplewell, which will soon render it desirable to place the school in a situation more adapted to its usefulness to the labouring classes. (*Report of Commissioners concerning Charities*, pp. 155-176.) The number of private day-schools in Bolton is about eighty; of which forty-four are for children between the ages of three and nine; fifteen for girls only, from five upwards; seven for boys only, of the same age; and the rest for pupils of both sexes, between the ages of four and twelve. The number of children educated in Sunday schools is very considerable, as may be seen from the following statement, taken with some of the above particulars from the *Journal of Education* (No. xvii. p. 74):—

	Boys.	Girls.	Total.
Parish School	430	720	1150
St. George's School	310	490	800
All Saints	75	125	200
Methodist—old and new } connexion	1464	1744	3208
Primitive and Independ- } ent Methodists	370	340	710
Independent Schools	430	570	1000
New Jerusalem	69	39	108
Catholic School	110	120	230
Unitarian	174	158	332
	3432	4306	7738

Besides these institutions, funds are raised for the establishment of two new schools, one in each of the townships, on the system of the British and Foreign School Society, for the education of a thousand children, 600 boys and 400 girls.

In addition to the school charities, considerable sums are distributed to the poor from various bequests connected with the town. From Hulton's Charity, 25*l.*; Parker's, 5*l.*; Gosnell's Charity, 5*l.*; Crompton's Charity, 7*l.* 10*s.*; Astley's Charity, 3*l.*; Cocker's Charity, 5*l.* 9*s.*; Aspendell's Charity, 5*l.* 15*s.*; Mort's Charity, 1*l.*; Lomax's Charity, 1*l.* 10*s.*; Greenhalgh's Charity, 4*l.* 10*s.*; and Popplewell's Charity, 30*l.* (*Report of Commissioners concerning Charities*, 1828, pp. 168-184.)

The dispensary was established in 1814, and is liberally supported. A clothing society, and a society for the relief of poor women during child-birth, are supported chiefly by ladies.

Petty sessions are held on Monday and Thursday in each week, which are attended by several magistrates, the

business of which has undergone a most extraordinary diminution since the Poor-Law Bill came into operation.

There is a large weekly market on Mondays and Saturdays, well supplied with all sorts of provisions and vegetables. There are two annual fairs, one on the 31st of July, and the other on the 14th of October, for hardware, toys, &c., and on the day preceding each is a fair for horned cattle. A fortnight fair is also held for lean cattle on Wednesdays, from the 5th of January to the 12th of May. A newspaper, under the title of the 'Bolton Chronicle,' is published every Saturday. (*Communication from Bolton*.)

BOMB, the original name of what is now called a shell, is a hollow globe of iron, which, when charged with a certain quantity of gunpowder, is projected from a mortar or howitzer, generally at a considerable angle with the horizon: in order that, by the momentum acquired in its descent, it may crush the roofs, and, by exploding, destroy the buildings on which it may fall. The name is thought to have been given as an expression of the sound produced either in the explosion, or at its discharge from the piece of artillery employed to project it.

It is said by Strada, in his account of the wars in the Low Countries, that bombs were employed for the first time in 1588 by Ernest, the father of Charles, Count of Mansfeldt, at the siege of Wachtendonk, a town near Gelders. He adds that they were invented, a few days before that siege commenced, by an inhabitant of Venlo; and it is stated that the people of this city, wishing to exhibit the invention in presence of the Duke of Cleves, discharged a bomb, which falling on one of the houses set fire to it, and the flames spreading, three fourths of the town were destroyed before they could be extinguished. (*Père Daniel, Histoire de la Milice Française*, liv. vii. chap. 6.) But Gross relates that a French translation, made in 1555, of a work by Valturinus, was accompanied by a print representing a cannon just fired, with a ball in the air and another on the ground, both of which were burning at the vent. A title to the print denoted that this was a contrivance for firing a ball filled with powder; and as the first edition of Valturinus is dated 1472, it appears from thence that bombs must have been invented about the middle of the fifteenth century. Blondel however, in his treatise entitled *L'Art de Jetter les Bombes*, remarks that bombs were used by the French for the first time in 1634, at the siege of La Mothe, under the direction of one Malthus, an English engineer, who was invited from Holland by Louis XIII., and was afterwards killed at the siege of Gravelines.

In 1688 there was cast in France an enormous bomb, which is said to have been in the form of an egg, and to have been capable of containing 7000 or 8000 pounds of powder; it was nine feet long and five feet in diameter, and the iron was six inches thick. The bomb was to have been discharged against the Algerines, and the ship in which it was embarked was to have been blown up with it. It was not however employed, probably in consequence of an opinion that it would not have had the intended effect, and no attempt has since been made to project such an immense mass of metal. While the Citadel of Antwerp was besieged by the French army in 1832, shells twenty-four inches in diameter were thrown from the largest mortar which has been employed in modern warfare; the shell or bomb was capable of containing ninety-nine pounds of powder, and when charged weighed 1015 pounds.

The word bomb being now nearly superseded, except as a component in those which express the subjects of the three following articles, and in the term bombardier, which is applied to the soldier whose duty it is to serve the ordinance from which shells are projected, the description of this missile will with most propriety be introduced under the words which denote the different species at present in use: as **CARCASS**, **CASE-SHOT**, **GRENADE**, and **SHELL**.

BOMB-PROOF. This name is given to a military magazine, or other building, when its roof has sufficient thickness to resist the shock of shells falling on it, after being projected from mortars at considerable elevation. Under the word **BLINDAGE** is given the construction of such buildings of timber as are intended to secure troops or artillery from the effects of what are called vertical fires, and under the word **CASEMATE** is shown that of the vaults which are formed in the masses of ramparts to serve for the like purposes. A bomb-proof, however, is generally understood to signify an isolated building, rectangular on the plan, formed of brick or stone and covered with a vaulted

roof of the same material. The intrados, or interior line, in a vertical and transverse section of the vault, is sometimes a semicircle, but now more generally a parabola; and the exterior surface of the roof has the form of two inclined planes meeting in a ridge which is parallel to the sides of the building and over the middle of its breadth. By this construction the greatest thickness is given to the crown, or upper part, where a falling shot or shell would be most injurious to the stability of the vault. It is intended to serve as a powder, or store-magazine, an hospital, or to cover a battery of guns or mortars; and when constructed in a fortress for the first of these purposes, it should not only be isolated, but should also be situated in some spot at a distance from the fronts likely to be attacked, and secured as much as possible against accidents.

As the details of the construction and uses of such buildings are given under *MAGAZINE*, it is only necessary to observe here, that the span, or interior width of a bomb-proof vault, is usually about eighteen feet, and the thickness of the arch three feet at the haunches or sides. But the extrados, or exterior of the vault, should be covered with a bed of earth about five feet deep, to deaden the concussion produced by the shells which may strike it; this earth should be renewed as fast as it is blown away by the explosions, to prevent the shell from falling on the naked vault, for, as each shell would tear off the masonry to the depth of two or three inches, it is evident that the building would be totally destroyed after a few successive shocks.

BOMB-VESSEL, a ship of about 350 tons burthen, usually forming part of a fleet intended by a bombardment to destroy or compel the surrender of some town situated on the sea-coast. It carries one 13 inch and one 10 inch mortar, besides two 6-pounder guns, one 12-pounder, and eight 24-pounder carronades; the crew consists of sixty-seven men, with the usual complement of officers for ships of the same class, besides a detachment of marine artillerymen, with their officers, for the service of the guns and mortars. The mortars are mounted on their beds, which are placed on traversing platforms in the middle of the gun-deck, and they may be fired over either side of the ship at elevations never less than 45°. In taking their stations previously to a bombardment, it is desirable that the vessels should keep beyond the range of the enemy's batteries, and that they should have springs upon their cables.

For particulars concerning the ordnance and stores on board of bomb-vessels, and for the management of the latter when in action, see the *British Gunner*, by Captain M. Spearman.

BOMBA'CEÆ, a group of plants considered by some a distinct natural order, by others as a mere section of *Sterculiaceæ*. They are usually large trees, with broad deep-green leaves, and flowers of considerable size. Technically they differ from *Malvaceæ* in having two cells to their anthers, which are often doubled down upon themselves, in their calyx opening in an irregular rather than a valvate manner, and in their stamens being usually collected into five parcels. Their anthers are often described as having only one cell; but this is an inaccurate mode of speaking of them, inasmuch as they are formed upon the common two-celled type, and merely have the cells united at the point of the connective.

This group contains some of the most majestic and beautiful trees that are known, but nothing of much medical or economical importance is furnished by them. Their wood is light and spongy; the long cottony substance found within their fruit, and which has gained for some of them the name of cotton-trees, is too short in the staple to be manufactured into linen; and the slightly acid or mucilaginous qualities that occur in the group are altogether inferior to those of many *Malvaceæ*. *Adansonia*, or the *Baobab tree*, already mentioned in its proper place, is one of them. It is remarkable for the excessive thickness of its trunk as compared with its height, and this is a character of common occurrence. Several American species spread enormously near the ground, forming huge buttresses with the angles of their trunk. This is especially the case with the genus *Eriodendron*, which is moreover often defended by very large conical prickles, which do not fall off till they are exfoliated by the gradual distention of the trunk. Among these plants is a singular instance of a flower resembling the paw of some animal. The tree which produces so strange a conformation is called the *Marsia*, and will be described

under *CHEIROSTEMON*. No bombaceous plants are found far beyond the tropics.

BOMBARDIER, a non-commissioned officer of the royal regiment of artillery, whose duty it is to load shells, grenades, &c.; to make and fix the fuzes, and who is particularly appointed to the service of mortars and howitzers. A certain number of bombardiers are attached to each company of artillery.

BOMBARDMENT. This is the action of throwing shells, carcasses, and shot into an enemy's town in order to destroy the buildings, and chiefly the military magazines; for which purpose mortar, howitzer, and gun-batteries are constructed in convenient situations, generally opposite to the most densely inhabited quarters. If the town is a seaport, bomb-vessels also are moored along the shore, and the firing is kept up simultaneously on the land and sea-sides of the place.

When an army invests a fortress, whether it proceed against it by the operations of a regular siege, or simply keep it in a state of blockade, a bombardment is one of the means resorted to in order to accelerate the surrender, by rendering its occupation dangerous to the citizens, and ruining the buildings in which the ammunition is secured, or in which the garrison while not on duty find repose.

Among civilised nations it has become a principle to spare as much as possible the lives and property of individuals who are not actually engaged in the military service of the state against which an army is employed; since, besides the cruelty of acting otherwise, the end thereby to be gained, which is the final termination of hostilities, is not in the smallest degree advanced. The practice of besieging fortresses is now so far reduced to a regular process that the time of their surrender may be confidently anticipated by so employing the artillery, that, while it effectually dismounts that of the enemy, and lays the rampart in ruins in the ditch, it scarcely produces the smallest injury to any but the defenders of the works: hence the simple bombardment of towns occurs so much less frequently now than in former times, and no circumstance is considered as a justification of the measure except the absolute inability to reduce a place by other means.

When a town is, from the fate of war, about to become subject to a bombardment, the garrison should endeavour to retard the calamity by the erection of advanced works about the place, or by keeping troops in the suburbs and neighbouring villages as long as possible. By this measure provisions, materials, and even workmen will be obtained in abundance for the service of the defenders; the inhabitants of the fortress also, finding that the garrison is not shut up within the walls, will be inspired with confidence in its protecting power, and thus induced to suffer less unwillingly the privations and dangers to which they must inevitably become exposed. The enemy moreover will be compelled either to abstain from constructing a line of *countervallation*, as it is called, to prevent the sorties of the garrison; or, if such is attempted, the line must be so extensive as to require a long time for its formation, and the works constituting it must be so far asunder as to render it impossible to watch the avenues of the place with sufficient care to prevent all communication between the town and country. The power of acting offensively may thus be not wholly taken away from the garrison, and the enemy may be kept at such a distance as to lessen materially the effect of the bombardment. What has been said must not be understood to imply that any village, suburb, or building, which, by falling into the power of the enemy, might facilitate his operations, is not to be destroyed before he can get possession of it; but it is evident that the object in view, which is the preservation of the place, and of its docks and arsenals, if it be a naval station, will be most effectually obtained by keeping the enemy as long as possible at a distance from them beyond the range of his artillery.

The garrison must of course employ a fire of the heaviest artillery to destroy the enemy's batteries as soon as they are formed. The casemates and blinded buildings in the town should be repaired and multiplied; and the ammunition should be kept in small quantities in each, in order to avoid the loss and damage which would be occasioned by the explosion of a large and full magazine; for which reason also, it should be disposed in the quarters least subject to the fire of the enemy. Wells and cisterns should be protected by shell-proof blindages, the fire-engines carefully secured, and companies of men formed whose duty should be to

proceed immediately with the engines to any spot where a fire may have broken out. The utmost intrepidity is required in men employed on this service, which is rendered particularly dangerous, because the enemy always continued to direct his fire towards any spot at which flames are seen to rise, in order to prevent if possible the defenders from extinguishing them. When red-hot shot are thrown into a town, men should also be appointed to seek them and, by pincers or otherwise, remove them to places where they can do no harm.

A strict police is to be maintained, and every precaution used to prevent conspiracies among the citizens for delivering up the place. For now, since the loss of a town does not, as in ancient warfare, entail upon the inhabitants the loss of life or liberty, it is easy to conceive that their interest in their property must unavoidably lead them to desire the cessation of the bombardment, though at the price of the transfer of the town to the enemies of their country; and it must be expected that they will use every means in their power, whether of persuasion or force, to compel the commander to surrender.

The most celebrated bombardments mentioned in history are those of Gibraltar, Copenhagen, and Algiers. The first of these places was invested on the land-side by a Spanish army, which was afterwards united to that of France, and on the sea-side by the combined fleets of the two nations. The investment took place in 1779, but no remarkable actions occurred till 1782. The town was twice distressed for want of provisions; the highest works of the fortress, though 1340 feet above the level of the enemy's batteries, were destroyed by shells from the latter several times; attempts were also made by the besiegers both to fire the ships in the harbour, and to annoy the British army by gun-boats.

On the other hand, the garrison was employed in strengthening the old fortifications and adding new batteries, and in making occasional sorties against the Spanish lines. In the last mentioned year, however, the besiegers converted some of their large ships into floating batteries, which, on September 13, commenced a tremendous fire on the town, while the land-batteries cannonaded the works in flank and rear; the garrison, in return, paying little attention to these, poured on the ships a corresponding fire of carcasses, shells, and red-hot balls. This work of destruction continued on both sides till about seven or eight p.m., when it nearly ceased. The utmost confusion and distress by this time prevailed in the fleet of the besiegers; several of their largest ships caught fire, and two of them blew up with tremendous explosion. The general peace, which was made in the beginning of the next year, put an end to this memorable siege after it had been carried on nearly four years.

The bombardment of Copenhagen took place in 1807, and was effected by a British army under Lord Cathcart, which closely invested the city on the land-side, while the fleet under Admiral Gambier blockaded the harbour. The fire from the land-batteries and bomb-vessels opened on the evening of September 2, and continued till the night of September 4, when a capitulation took place. In this bombardment the rockets invented by Sir William Congreve were used for the first time, and it is said that the cathedral, with above three hundred houses, was destroyed by the shot and shells which were thrown into the town. The last action of this nature occurred in 1816, when the united fleets of England and Holland, consisting of fifteen ships of war, besides gun-boats, under the command of Lord Exmouth, bombarded Algiers. The firing continued during twelve hours, in which time all the enemy's ships in the harbour were destroyed and great part of the town.

BOMBAY, an island on the western coast of Hindustan, lying off the shore of the Concan in the province of Hejapore. The town, which is at the south-eastern extremity of the island, is in 18° 56' N. lat., and 72° 57' E. long. It lies to the south of the island of Salsette, which is considered to be a dependency of Bombay; the two islands are connected by a causeway which was constructed in 1805 by Mr. Duncan, at that time governor of the presidency.

Bombay is little more than eight miles long from north to south, and about three miles broad in its widest part. It is formed by two ranges of whinstone rock of unequal length, running parallel to each other on opposite sides of the island, and at the distance of between two and three miles from each other. The eastern range is about seven and the western about five miles long; and they are

united at the north and south by belts of sandstone which are only a few feet above the level of the sea. The interior of the island was formerly liable to be flooded as as to give to the whole the appearance of a group of small islands. This flooding is now prevented by the construction of several substantial works which keep out the spring-tides, but as the lower parts of the island are ten or twelve feet under high-water mark, a great part of the interior is, during the rainy season, reduced to a swamp. The site of the new town of Bombay is subject to this disadvantage, so that during the continuance of the wet monsoon the houses are separated from each other by water sometimes for seven or eight months of the year: this spot was recovered from the sea in the latter part of the last century.

The natural difficulties of the island must have prevented any settlement upon it by Europeans but for the advantages of its position for commerce, and its harbour, which is unequalled for safety throughout the British Empire in India. This excellent harbour, on account of which the island received its name (Bom Bahia) from the Portuguese, is bounded on the north and west by the islands of Salsette, Bombay, and Colabba, or Old Woman's Island, which last is a small island or narrow promontory, naturally connected by a mass of rock, which rises near the surface of the water, with the south-east extremity of Bombay, and now united to it by a causeway which is overflowed at spring-tides. The cantonments for the European troops are situated on Colabba. On the east side of the harbour, about four miles from Bombay, is Butcher's Island, and behind this the island of Elephanta, celebrated for its caves and temples, and which is only five miles from the Mahratta shore. Three miles south of Butcher's Island and five miles east from Bombay is Caranja Island, on the western side of which is an extensive shoal. The entrance to the harbour thus formed is between Colabba and Caranja Islands, or rather between the shoal just mentioned and a reef of rocks surrounding on all sides the point of Colabba, and extending about three miles to the southward. The channel between these is about three miles wide, and seven to eight fathoms deep. In entering the harbour it is necessary to clear a sunken rock on a bank which occur in the passage. There is a light-house built on the southern extremity of Colabba Island, 150 feet above the level of the sea, which may be seen seven leagues off the coast.

There is no other important harbour in British India where the rise and fall of the tides are sufficient to admit of the formation of wet docks: the rise at ordinary spring-tides is fourteen feet: occasionally it is three feet higher.

In the age of the *Periplus* this island, then called Kalliena, was little frequented. It had previously been an established commercial port, but Sandanes, one of the sovereigns of Barugaza, prohibited any of the Egyptian trading vessels from entering the harbour, and if any were compelled to do so by accident or stress of weather, a guard was immediately put on board, and they were taken to Barugaza.

Bombay was ceded by the Moguls to the Portuguese in 1530, and came into the possession of the English on the marriage of Charles II. with the Infanta Catherine of Portugal. By the marriage-contract the king was to receive 500,000*l.* in money, the town of Tangier, in Africa, and the island of Bombay with its dependencies, together with permission for his subjects to carry on a free trade with all the Portuguese settlements in India and Brasil. A fleet of five ships of war, commanded by the earl of Marlborough, with 500 soldiers on board, was sent to receive possession of Bombay, where they arrived on the 18th September, 1662. Under the pretext that the instrument by which the sovereignty of the island was made over did not accord with the usages of Portugal, but really, as it is said, instigated by the priests, who could not endure the thought of surrendering the place to heretics, the Portuguese governor refused to complete the cession, and the fleet returned to England. This matter was not arranged between the two governments until 1664, when possession was taken in the name of the king of England by Mr. Cooke, and Bombay has since that time remained in the possession of the English. The trade carried on from this settlement by officers in the king's service, who paid no freight for the goods which they received from Europe, and who consequently were able to undersell the factors of the East India Company, caused great dissatisfaction on the part of that corporation; and on

the other hand, the expenses which the settlement occasioned beyond the revenue to the king made him willing to transfer the island to the Company. The instrument by which this transfer was effected bears date 1668, and states that the island is 'to be held of the king in free and common socage, as of the manor of East Greenwich, on the payment of the annual rent of 10*l.* in gold on the 30th September in each year.' With the place itself the Company received authority to exercise all political powers necessary for its defence and government. Bombay is therefore the oldest of the East India Company's settlements in Hindustan, and the terms upon which it was acquired first invested them with that political power which they have since exercised in India. In 1674-5 a mutiny broke out in Bombay, but was easily repressed, when the ringleaders were tried and executed, the Company then first exercising the power of enforcing martial law. Another insurrection in 1683 was not so easily quelled. The commander of the troops, dissatisfied with the proceedings of the Company, and being joined by the soldiers as well as the great body of the settlers, renounced the authority of the Company, and by a proclamation dated Dec: 27, 1683, declared that the island belonged to the king. This proceeding was not approved by the crown, and orders were sent to deliver the island to the officers of the Company, who were directed to proceed by force to their execution. It was only under the promise of free pardon to all the insurgents that possession was obtained, and at this time it was deemed expedient to guard against any similar insurrection in future by transferring to Bombay the seat of the Company's government in India, which had previously been placed at Surat. In 1687 the title of regency was given to the administration at Bombay, and unlimited power over the rest of the Company's settlements in the East was given to the governor.

The only natural vegetable production of the island, with the exception of some rank grasses, was the cocoa-nut tree, which grew very abundantly, it being a property of that tree to be uninjured by sea-water. It was necessary to clear away great numbers of this tree in order to erect the fort and buildings of the town. The spots capable of being cultivated in the island will hardly yield a week's supply of provisions for its inhabitants, who are dependent upon the farmers and gardeners of Salsette, which is well cultivated.

The fort and town of Bombay stand (principally on a narrow neck of land) at the south-eastern extremity of the island. The fortifications are extensive, and would require a numerous garrison for their defence; towards the sea the works are extremely strong, but on the land-side, supposing an enemy to have made good a footing on the island, they would offer comparatively little resistance. The houses within the walls are built of wood, with verandahs and sloping roofs covered with tiles. In 1803 a great fire destroyed many houses; after which a great number of dwellings were built on a salt ground then newly recovered from the sea as already mentioned. The adoption of this spot for building ground appears to have been a matter of necessity arising from the denseness of the population in proportion to the quantity of land cleared or capable of being converted to building purposes. Many of the dwellings, both within and beyond the walls of the fort, are constructed in a commodious manner, particularly in what is called the European quarter. The shops and warehouses belonging both to European and to native merchants and traders are upon a large scale. The northern quarter of the fort, which is principally inhabited by Parsee families, is dirty and uninviting. The government-house within the fort is a large convenient building, used principally for conducting the public business. The governor has two other residences; one at Malabar point, the S.W. extremity of the island; the other at Parell, about four miles from the fort near the eastern shore of the island. The first of these, which is a cottage beautifully situated on a rocky promontory, is inhabited by the governor during the hottest season. The house at Parell is handsome, and contains rooms of noble proportions; this building is said to have been formerly a church belonging to the Jesuits, from whom it was purchased by the Company.

Niebuhr remarked that the temperature at Bombay was very moderate, owing to the sea-winds and the quantity of rain that falls in the wet season. He admits that many Europeans died suddenly, but he attributed this nearly altogether to their injudicious mode of living.

The barracks, arsenal, and docks are all within the fort.

According to a valuation made in 1815 the buildings within the walls were worth rather more than one million sterling, and the rent of houses, including the annual value of the Company's buildings, was 52,796*l.*

Since the first occupation of the island by the English, its resident population has increased more than tenfold. At that time it amounted to about 15,000. In 1716 the number was 16,000, and in 1816, 161,550, divided into the following classes:—

British residents, not military	1,840
Do. military and marine	2,460
Native Christians, Armenians, and descendants of Portuguese	11,500
Jews	800
Mohammedans	28,000
Hindus	103,800
Parsees	13,150

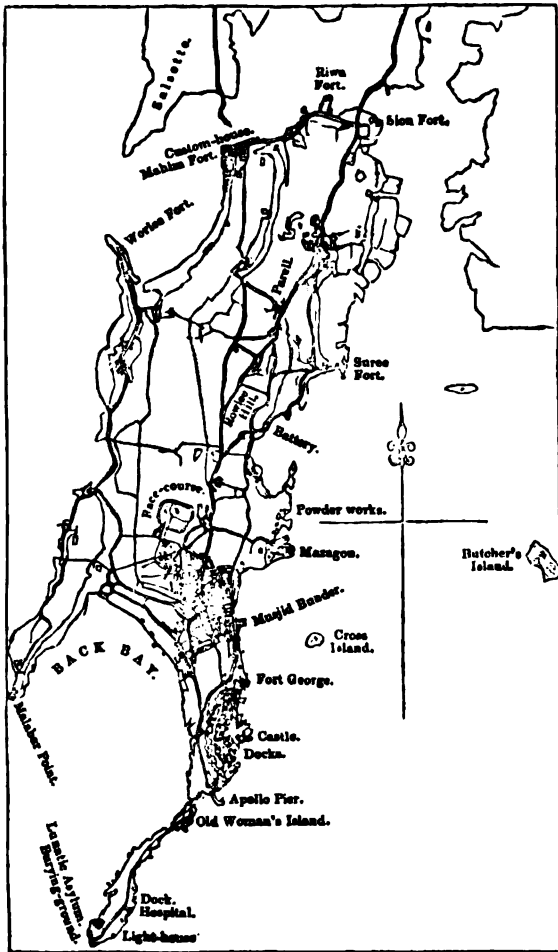
161,550

Including the fluctuating population, which is at all times very great, it is estimated that Bombay at this time contains 229,000 souls. The number of houses, according to the government census in 1816, was 20,786. The floating population, being drawn together by commercial pursuits from various parts of India, is necessarily of a very mixed character, and consists principally of Persians, Arabs, Mahrattas, Carnatas, Portuguese, Indians from Goa, and a great number of sailors. The lower classes of residents occupy small clay huts without the fort, thatched with palmyra leaves. There is only one English church, which is within the fort. Portuguese and Armenian churches are numerous both within and without the walls; there are likewise three Jewish synagogues, and a great number of mosques and Hindu temples; the largest Hindu temple, which is about a mile and a half from the fort, is dedicated to Momba Devi.

The property of the island is principally in the Parsee inhabitants, who are active and intelligent, taller, better formed, more athletic and with handsomer features than Hindus. In early youth their females are delicate and handsome, but they very soon grow coarse in their persons, and show the marks of age sooner than Indian women in general. The principal merchants on the island are Parsees, and it is usual for every European house of commerce to contain one or more Parsee partners, who supply a great part of the capital. These people wear the Asiatic costume, but they assimilate more than other eastern people to the customs of Europeans, and nearly the whole of them speak English; their children are invariably taught the language, and many of them speak it as fluently as Europeans; at the same time they adhere most rigidly to their religious customs and observances. In the morning and evening they crowd to the shore, where they prostrate themselves in adoration before the sun. They deposit their dead in large cylindrical buildings, each twenty-five feet high, the interior of which is built up solidly with masonry to within five feet of the top, with the exception of a kind of well fifteen feet in diameter in the centre. The bodies are deposited between this well and the wall, and being only loosely wrapped in cloth, are speedily devoured by vultures, many of which are always to be observed hovering about these charnel-houses. From time to time the bones are thrown into the well in the centre, from the bottom of which they can be removed through subterraneous passages. There are five of these public tombs in the island, all of which are from two to three miles distant from the fort: the more wealthy of the sect have private tombs of similar construction.

The docks within the fort, although the property of the East India Company, are entirely under the management of Parsees, by whom merchant-vessels of 1000 to 1200 tons burden, frigates, and even line-of-battle ships are built. These docks were about twenty-five years ago enlarged and improved under the superintendence of Major Cooper of the Engineers. The buildings are greatly admired for their architectural beauty; the slips and basins are calculated for vessels of any size. Two ships of the line, or one ship of the line and two frigates, can be completely built and equipped in these docks every eighteen months. Bombay being situated between the forests of Malabar and Guzerat, receives supplies of timber with every wind that blows. Ships built of teak-wood are much more durable than those built with European timber; they have been known to last more than fifty years. Some Bombay-built ships, after

being employed as traders during fourteen or fifteen years, have been bought by government and added to the naval force of the country, being then considered much stronger than newly-built European vessels. From the cheapness of labour, ships may be built at Bombay for three-fourths of the cost in England. The Minden, a seventy-four gun ship, which was launched at Bombay in 1810, was constructed entirely by Parsees, without any assistance from Europeans, and since that time several frigates and line-of-battle ships have been built at these docks.



[Map of Bombay.]

In addition to its trade with Europe and with China, a very great traffic is carried on by coasting-vessels with all the ports on the western side of India, from Cape Comorin to the Gulf of Cutch. The vessels thus employed vary in size from ten to near two hundred tons burden, and nearly 800 of them are registered belonging to the port. The articles which form the principal part of this trade from Bombay are European manufactures and the produce of Bengal and China, the returns being made in cotton-wool and cloths, timber, oil, and grain from the northern ports, and from the south, cotton, hemp, coir, timber, pepper, rice, and cocoa-nuts.

The merchandise thus brought to Bombay is in great part re-exported in larger ships to different parts of Europe, to North and South America, to Canton, to the Arabian and Persian Gulfs, and to the Bay of Bengal. The value of this export trade during three years ending with 1831-32, as far as relates to Europe and America, was as follows:—

	1829-30.	1830-31.	1831-32.
To Great Britain	£547,399	684,009	636,096
“ Foreign Europe	13,145	11,417	11,062
“ North and South America	19,034	8,960	8,990
	£579,508	704,386	656,078

No separate account has been given of the value of the exports made from Bombay to Canton. We know the aggregate value of the shipments so made from the three presidencies, and also the number and tonnage of the ships despatched with the same; from which last information it would appear that more than two-thirds of the whole country trade between India and China is, as far as export is concerned, carried on from Bombay. In the three years ending with 1831-32, the tonnage so employed was as follows:—

	Calcutta.		Madras.		Bombay.		Total.	
	Ships.	Tons.	Ships.	Tons.	Ships.	Tons.	Ships.	Tons.
1829-30	18	5,373	4	4,449	32	25,769	54	35,591
1830-31	25	10,119	4	3,178	26	96,696	55	110,093
1831-32	25	8,485	2	872	27	16,656	54	25,813

The total value of this trade in each of these three years was

1829-30	£3,996,881
1830-31	4,755,948
1831-32	4,450,218

The goods sent from India to China comprise principally cotton wool, opium, metals, spices, dye-woods, and woollen goods. Their value has been employed chiefly in paying for the purchases of tea by the East India Company, whose agents at Canton have drawn bills upon the Indian presidencies, and upon the directors in London, for the reimbursement of the merchants by whom the funds have been so supplied to them.

The imports into Bombay from Europe and America have been as follows:—

	1829-30.	1830-31.	1831-32.
From Great Britain	£911,606	1,106,637	922,200
“ Foreign Europe	41,632	20,128	9,700
“ North and South America	16,935	23,605	19,000
	£970,173	1,170,380	950,900

The value of the trade between Bombay and the Eastern Islands has been,

	Imports.	Exports.
1829-30	£7,743	£69,749
1830-31	83,603	41,593
1831-32	87,924	51,133

With the Arabian and Persian Gulfs the trade in each of the same years was,

YEARS.	IMPORTS.				EXPORTS.				
	English.		Arab.		English.		Arab.		Value of Exports.
	Ships.	Tons.	Ships.	Tons.	Ships.	Tons.	Ships.	Tons.	
1829-30	19	5,692	8	2,509	561	213	122	877	61,896
1830-31	19	4,765	12	2,578	528	688	113	605	122,256
1831-32	18	4,563	4	1,985	360	402	122	725	21,215

Through these channels Bombay receives from Persia raw silk, copper, pearls, galls, coffee, gum-arabic, copal, myrrh, olibanum, bdellium, assafostida, dried fruits, horses, and bullion. The returns are grain, Bengal and China sugar, British manufactured goods, cotton and woollen, and spices. The merchandises sent to Calcutta from Bombay, in return for sugar, indigo, and rice, are timber, coir, cocoa-nuts, sandal-wood, and cotton.

The shipments from England to Bombay consist of the usual assortment of British manufactures and metals: the returns for which are made in Persian raw silk, cotton-wool, spices, gums, and drugs.

The heavy duties levied by the Ameers of Scind, at the mouth of the Indus, together with the unsettled state of Afghanistan, have reduced the inland commerce of Bombay with Central Asia to a comparatively trifling amount. The little trade now carried on between those quarters is conducted by means of a tedious and expensive land route through Surat.

Among the mercantile establishments conducted in

Bombay is an insurance company with a capital of 200,000£ sterling.

The seamen from the port of Bombay are considered to be the best among the natives of India. It is usual for ships of considerable burthen to be under the charge of European commanders and officers.

The western coasts of India are infested by numerous piratical vessels, and to keep these in check it has been necessary for the East India Company to maintain a considerable naval force at this station. The expense of maintaining this force is included among the charges of government in the Bombay presidency, and this forms one among other reasons why its revenues are invariably so greatly below its expenditure. The navy is thus maintained, not for the exclusive benefit of Bombay, but for the protection of an extensive and profitable commerce from which every part of British India derives benefit.

The travelling distances between Bombay and the most considerable cities and towns in India are given by Major Rennell as follows:—

Ajmeer, 650 miles; Allahabad, 977; Ahmedabad, 321; Ahmednuggur, 181; Aroot, 722; Aurungabad, 260; Baroach, 221; Bassein, 27; Bednore, 452; Bijanaghur, 398; Calcutta, 1301; Canoge, 889; Cashmere, 1233; Cuttock, 1034; Cochin, 780; Delhi, 880; Dowlatabad, 258; Goa, 292; Golconda, 475; Gwalior, 768; Hydrabad, 480; Jugernauth, 1052; Indore, 456; Lahore, 1010; Lucknow, 923; Madras, 758; Masulipatam, 686; Mirzapore, 952; Moorshedabad, 1259; Moulton, 920; Mysore, 630; Nagpore, 552; Oude, 1013; Oojein, 486; Patna, 1145; Pondicherry, 805; Poonah, 98; Seringapatam, 622; Sumbhulpor, 826; Surat, 177; Tellecherry, 615:

BOMBAY, PRESIDENCY OF. Bombay is the seat of one of the three presidencies into which the British empire in India is divided. Together with the presidency of Fort Saint George, or Madras, it is subordinate to the Governor-General of India, whose residence is in Calcutta. The territory under the immediate jurisdiction of the governor and council of Bombay is situated between the 14th and 24th degrees of N. lat. and the 71st and 77th degrees of E. long.; and comprehends the following districts:—

Ahmedabad, Kaira, Surat, Baroach, Bombay, Island. } North of the Island of Bombay.

Darwar, Candeish, Northern Concan, Southern Concan, Poonah, Ahmednuggur, } South of the Island of Bombay.

The following statement of the extent and population of the districts comprehended in the presidency of Bombay was given in evidence before a committee of the House of Commons which sat in 1831, to inquire concerning the affairs of India.

	English Square Miles.	Population.
Bombay Island, including Colabba or Old Woman's Island	18½	162,570
Surat, comprehending the city and suburbs, the town of Randier, and the twelve pergunnahs which constitute the collectorate of Surat	1,350	454,431
Baroach collectorate	1,600	229,527
Ahmedabad collectorate	4,600	528,073
Kaira collectorate	1,850	484,735
Southern Concan collectorate	6,770	640,857
Poonah collectorate	20,870	650,000
Ahmednuggur collectorate		
Candeish collectorate	12,430	417,976
Darwar collectorate	9,950	778,183
The Southern Jaghires		
Sattara		736,284
Total	59,438½	6,251,546
The above is exclusive of the district of the Northern Concan, from which there are no returns; its area and population are estimated at	5,500	387,264
	64,938½	6,638,810

Among the population thus stated, which is composed of different races of people speaking different languages, and who, up to a recent date, have lived under different systems of religion, laws, and government, the greatest variety must necessarily exist. The number of resident Europeans in this presidency is smaller, when compared with its area and native population, than the number of Europeans in Bengal and Madras.

On the subject of education, the same general remarks as are made in regard to Bengal (vol. iv. p. 233), apply equally to Bombay. By a recent report from the Sudder Dewannee Adawlut, it is stated that in the British territories dependant on Bombay there are 1705 schools, at which 35,153 scholars were receiving instruction. Twenty-five of these schools, containing 1315 scholars, were maintained by the government of the company, and the remaining 1680 were mere village schools, with 33,838 scholars. The proportion of the population attending upon the schools is thus shown to be exceedingly small, besides which it may be said that the village-system of education is of the lowest description, and the same that has been handed down from time immemorial. The books read are some silly stories, and the writing acquired goes little beyond the ability of signing the name.

The sums annually chargeable on the revenues of India for the support of native schools within the presidency was thus given in 1832, from the records of the company:—

	Rupees.
Bombay school	3,600
Society for Promoting the Education of the Poor within the Government of Bombay	11,385
Bombay Native School-book and School Society	12,720
Native School Society, Southern Concan	500
For the education of natives on Capt. Sutherland's plan	4,800
Dhuksna, in the Deccan	50,000
College at Poonah	15,250
Engineer Institution at Bombay	180
For an English class	960
Total rupees	99,395

equal to 9939½ 10s. sterling.

The number of schools and of scholars are thus distributed through part of the presidency, as to which only the details are given:—

	Schools.	Scholars.
Ahmedabad—city, 21; village, 63	84	2,651
Southern Concan—in private dwellings, 58; in temples, 28	86	1,500
Northern Concan	9	390
Kaira District	139	13,900
Kaira Sudder Station	2	230
Surat Zillah	139	3,000
Surat Town	136	3,046
Broach Zillah	98	not stated
Broach Town	16	373
Kandeish	189	2,022
Poona City	222	not stated
Poona District	149	2,445
Ahmednuggur	161	not stated
Darwar	150	2,351

The number of villages in these districts is stated to be 15,492, while the number of village schools is only 1185, showing only one school for more than thirteen villages. The chief obstacle in the way of establishing new schools is stated to be the difficulty of obtaining qualified teachers: many of those at present employed are indeed far from answering this description; but this is an obstacle which, if the government were so disposed, might surely be materially lessened, or indeed removed, in the course of a few years, by the establishment of normal schools in the chief town of each district.

A literary society has been established for many years in Bombay. Three quarto volumes of its transactions were printed between 1819 and 1823. In 1819 the society became a branch of the Royal Asiatic Society of London. There is also a Geographical Society recently established at Bombay.

Our information concerning the state of crime throughout the Bombay presidency, is very insufficient. Returns have been made from the greater part of the districts, stating

the number of persons who have been charged with the commission of offences during the five years ending with 1829. The returns made for the last year of this series are more complete than those for the earlier years, and enable us to offer the following abstract of the number of offenders, and the punishments awarded to those of them who were

convicted on trial. Not any statement is given as to the nature of the crimes, nor as to the connexion between the crimes and the punishments awarded. The inconvenience of this deficiency has been felt by the home government, and we perceive that instructions have been given to supply the omissions in future returns.

Abstract of the Proceedings of the Criminal Courts and the Police under the Presidency of Bombay, in the year 1829.

	Extent in Square Miles.	Population in 1829.	Com-plaints Preferred.	Persons Apprehended.	Number Ac-quit- ted.	Number Pun- ished.	Re- main- ing to be Tri- ed.	Fined and Re- leased.	Imprisoned				Sen- tenced to Death and Exe- cuted.
									For Short Periods.	From 1 to 7 Years.	For 14 Years.	Per Life.	
Surat	1,350	454,431	4,067	3,908	2,240	1,665	3	1,330	238	85	1	2	9
Ahmedabad	6,450	1,012,808	1,254	2,960	421	2,539	—	2,286	127	119	1	5	1
North Concan	5,500	387,261	1,751	1,950	326	1,624	—	1,475	16	60	22	18	3
South Concan	6,770	640,857	1,572	2,851	485	2,366	—	2,255	38	61	3	6	4
Poona and Shola- pore } Ahmednuggur and Candiesh }	33,360	484,717 1,067,976	1,946 1,858	2,962 2,235	1,524 903	1,374 1,273	64 59	1,330 1,147	2 21	14 94	27 —	— 7	1 4
Total	53,370	4,048,053	12,448	16,866	5,899	10,841	126	9,823	472	433	53	38	22

The military force maintained by the East India Com- pany in the districts comprehended within the Bombay presidency, was as follows, in the year 1830, the latest date for which returns have been given to parliament:—

Engineers—Officers, Europeans	21												
„ „ Natives	3												
„ Non-commissioned Officers and Privates, Europeans	14												
„ „ Natives	147												
				161									
Artillery—European; Horse, Officers	20												
„ Non-com. Officers and Priv.	562												
„ Foot, Officers	32												
„ Non-com. Officers and Priv.	1,811												
„ Native—Foot, Offic. Europ.	20												
„ „ Natives	23												
„ Non-commissioned Officers and Privates, Europeans	2												
„ „ Natives	890												
„ Ordnance Drivers, &c.	109												
				1,044									
Cavalry—King's, Officers	26												
„ Non-commissioned Officers and Privates	679												
„ Company's, Officers, Europ.	45												
„ „ Natives	75												
„ Non-commissioned Officers and Privates, Europeans	2												
„ „ Natives	2,695												
				2,817									
Infantry—King's, Officers, Europeans	133												
„ „ Privates	3,321												
„ Company's, Officers, Europ.	473												
„ „ Natives	466												
„ Non-commissioned Officers and Privates, Europeans	934												
„ „ Natives	24,424												
				26,297									
Invalids—Europeans	66												
„ Natives	1,797												
				1,863									
Pioneers—Officers	16												
„ Privates	902												
				918									
Carried forward													39,708

Brought forward	39,705
Hospital—Surgeons and Assist.-Surg.	156
„ Native Doctors	136
Staff—Commissariat, European Officers	9
„ Other Staff, European Officers	82
„ European Non-commis. Officers	57
	148

Regulars—Europeans	7,657
„ Natives	28,613
	36,270
Irregulars and Invalids—Europeans	70
„ „ Natives	3,808
	3,878

Europeans, 7,727—Natives, 32,421. Total 40,148
The expense of maintaining this force amounted to 1,849,510l., exclusive of the cost of military stores sent from Europe.

The public revenue and charges of government in this presidency during three years, from 1831-32 to 1833-34, were as follows:—

	1831-32.	1832-33.	1833-34.
Revenue	£2,096,343	£2,125,340	£2,322,682
Charges, including interest on debts	2,754,925	2,662,741	2,660,036
Deficiency	£658,582	£537,401	£367,354

The above charges are exclusive of any proportion of the expenditure incurred in England for the general manage- ment. The statement from which this abstract has been drawn does not afford the means of apportioning the amounts to the different districts. Such a statement was given for the year 1827-28, for the undermentioned districts, showing the gross aggregate collections, and the charges in the revenue and judicial departments. It was as follows:—

	Gross Aggre- gate Collec- tion.		Charges in the Revenue and Judicial Depart- ments.		Net Collec- tion.
	Rupess.	Rupess.	Rupess.	Rupess.	
Southern Concan	18,41,845	5,26,665	12,55,120		
Northern Concan	14,15,730	5,38,311	8,57,419		
Surat	22,23,687	8,98,187	18,25,499		
Baroach	20,30,967	4,78,049	15,30,918		
Kaira	24,11,625	8,37,340	15,74,285		
Ahmedabad	17,01,784	5,39,694	11,62,090		
Poona	20,56,105	8,31,031	12,25,074		
Ahmednuggur	21,25,045	8,11,645	13,13,400		
Candesh	19,87,653	11,76,699	8,10,954		
Darwar	28,76,688	3,78,668	24,98,020		
Total	2,02,59,007	69,68,904	1,38,49,105		
Sterling	£3,022,900	£698,990	£1,324,010		

(Rennell's *Memoir of a Map of Hindustan*; Mill's *History of British India*; *Tables of the Revenue, Population, Commerce, &c., of the United Kingdom and its Dependencies*, parts iii. and iv.; M'Pherson's *History of the European Commerce with India*; Niebuhr's *Description of Bombay*, vol. ii., Copenhagen ed.; Vincent's *Periplus of the Erythrean Sea*, part ii.; *Reports of Committees of both Houses of Parliament appointed to inquire concerning the Affairs of the East India Company in 1831 and 1832.*)

BOMBAZINE. This word is derived from the Greek bombyx (βόμβυξ), denoting both a silk-worm and the silk spun by that insect.

Bombazine is the name of a fabric woven of worsted and silk; the warp being the silk, the weft (also called shoot) the worsted. The worsted is thrown on the right side, which has a twill upon it. The manufacture of bombazine originated in Norwich, and is now almost entirely confined to that city, to Kidderminster, and Halifax in Yorkshire.

The weaving of worsted stuffs was originally introduced into England in the reign of Henry I. by a Dutch colony, who, being driven from Holland by an inundation, settled at Wursted or Worsted (hence the name), in Norfolk. The first charter granted to the city of Norwich by Henry I. enabled the Flemings, who had long frequented the city for the purchase of wool, to settle there and vest their property with greater security in the manufacture of worsted stuffs. Norwich became in consequence one of the most flourishing cities in England, and during the reign of Edward III. the government thought fit to protect the worsted weaving and wool trade by many statutes, writs, and proclamations, and by granting great privileges to foreign artificers settling in the city.

In 1467 an act was passed for the true making of worsteds in Norwich and Norfolk, authorising the weavers yearly to elect eight wardens, with the power to survey all worsteds, and make such regulations as were judged to be for the good of the craft. In 1575 the Dutch elders presented in court in Norwich a new work called bombazines, praying to have the search and seal of them to their use, exclusive of the Walloons, who, on their parts, insisted that all white works belonged to them; but the Dutch, as first inventors, had their petition granted them. From this time the bombazine trade gradually increased, and the article was largely exported to various parts of Europe, especially to Spain, and the Spanish colonies in South America, where it was used as the dress of some of the religious orders, and of the women. The mantilla, an indispensable article of female attire among the Spaniards, was universally made of black bombazine. It has however of late been greatly superseded by black silk.

The great increase in the manufacture of bombazine took place soon after the introduction of spinning wool into yarn by machinery. It is worthy of remark that an invention, which was in the first instance so obstinately opposed by the operatives, and which is even now ignorantly condemned by many as destructive of the interests of the poor, was, in reality, the cause of the increase of the bombazine trade, and of the consequent employment of many thousand hands.

In order to prove this, it is necessary to state that yarn was originally spun by the hand: the wool, after combing, was given out to the spinners by persons who weekly went the round of the country for this purpose, and received it when spun into yarn. It was required that a given weight of wool should be converted into not less than a given number of hanks or skeins of yarn, containing 560 yards, but it was at the same time desirable this number should be exceeded as much as possible, in order to procure a finer article. The yarn, when received from the various spinners, was found to be uneven in size from the mode of spinning, and from the different hands employed upon the same parcel. The bombazines were consequently equally uneven. Upon the introduction of spinning machinery, the wool was sorted and the yarn spun of an even thickness, but of various sizes. This change enabled the bombazine manufacturer to dye the yarns of various colours, and to produce an even, soft, and elegant article, fitted in hue and texture for all seasons. A large demand was immediately created for coloured bombazines; and this manufacture alone employed in Norwich, in the years 1814, 1815, and 1816, about 12,000 hands, an increase which could not have been obtained by any other means than by the use of mill-spun yarn.

The changes of fashion have thrown the coloured bombazine out of use, and the article is now made only in black

for mourning and for exportation. It must however always continue in demand while custom prescribes it as the mourning dress appropriate to females.

The capital employed in Norwich during the most flourishing period of the bombazine trade amounted to about 300,000*l.* At the present moment the capital employed does not reach 100,000*l.* (*Communication from Norwich.*)

BOMBELLI, RAPHAEL, a Bolognese mathematician of the sixteenth century. We know nothing of his birth, life, or death, except his work on Algebra, published in 1572 (Hutton), or in 1579 (Montucla, Bossut, Wallis, Dechales, De Thou's *Catalogue*, &c.), or in both (Lacroix, *Biog. Univ.*) The book itself is very scarce. Bombelli is principally known as the first who attempted the solution of what is called the *irreducible case* in cubic equations. He gave the geometrical solution which depends upon the trisection of an angle, and observed that the latter problem may be reduced to a cubic equation. He is also the first who attempted the actual extraction of the cube root in the result of Cardan's (or Tartalea's) well-known formula.

Bombelli states that he discovered a manuscript of Diophantus in the Vatican Library, and with another had translated the greater part for publication. He says, that he found frequent references to Indian authors, from which he learned that algebra was known to the Hindoos earlier than to the Arabs. This assertion has been much quoted and frequently censured: Cossali caused all the Vatican manuscripts now existing (three in number) to be closely examined, but without finding any thing to confirm Bombelli's assertion; which remains a puzzle, since there is no suspicion of deceit, and the work of Diophantus is in reality full of questions akin to those treated in the Hindoo *Viga Ganita*. But as Bombelli is said, in the Toulouse edition of Diophantus, to have misinterpreted the questions from that writer which he inserted in his own algebra, it is possible that he may have not well understood the Greek. [ALGEBRA, DIOPHANTUS.] For further information, see Hutton's *Mathematical Tracts*, vol. ii., p. 252; Montucla, *Hist. des Math.*, vol. i., p. 598; also Cossali, *Storia di Algebra*. If there be any mention of Bombelli in Kästner's *History* or Murhard's *Bibliography*, we cannot find it.

BOMBIC ACID. The silkworm, especially in the chrysalis state, contains an acid liquor, and hence the name of bomic acid. It was discovered from the circumstance of blue paper, which had been accidentally laid near these insects while changing to the state of chrysalis, being found covered with red spots, as if drops of acid had been spilled upon it.

When the insect is subjected to pressure it also yields a liquor from which alcohol precipitates mucilage, oil, and glutinous matter, and leaves bomic acid in solution; by evaporating this there is obtained an acid pungent fluid of an amber colour, which reddens vegetable blue colours, and forms salts with the alkalies, earths, and metallic oxides, which have been called *bombiates*.

This acid product has not been examined of late years, and is scarcely noticed by modern authors. Neither its nature nor that of its salts is accurately known; and it is not even certain that it is a peculiar acid. It is probable that a re-examination would show that it is similar to the formic acid, or acid of ants.

BO'MBUS (entomology), the generic name of those insects commonly called humble-bees: this latter name was derived (Messrs. Kirby and Spence conjecture) from the German hummel or hummel-biene, a name probably given to these insects from the humming sound which they emit. The Bombi belong to the order Hymenoptera and family Apidae, and, as regards the English species, are by far the largest of the tribe. They may be distinguished by the following characters:—body thickly covered with hair; head with a longitudinal groove and an indentation extending across from the upper part of the eyes; in this indentation the three stemmata are placed, being arranged nearly in a straight line; and it is from the central stemmatum that the longitudinal groove has its origin, whence it extends downwards; antennæ with twelve joints; labrum with its surface uneven; mandibles with several longitudinal grooves on the upper side; posterior tibiae compressed, smooth, margined with strong recurved hairs,* and armed with spines at the apex.

* These recurved hairs (*cybicides*) form, as it were, a little basket, in which the Bombi carry to their nests the farina which they collect from flowers.

The above are the peculiarities of the females. In the males the antennæ are thirteen-jointed and considerably longer than those of the other sex; the hinder tibiae want the corbicula; the mandibles are bidentate at the apex and each furnished with a tuft of curved hairs; they differ likewise in possessing no sting and in the structure of their claws, but these two last characters are common to the whole tribe of Apidæ.

The neuter bees resemble the females in every respect excepting size; in this they are inferior to the males, which latter are rather less than the females.

Kirby, in his monograph on the bees of this country, enumerates thirty-seven species as belonging to his section "c. 2." this section, with the exception of a few species [PYTHRUS], now constitutes the genus of which this article treats.

The prevailing colours of the species are yellow, red, and black; and as these colours are disposed with a certain degree of uniformity, we have arranged the following, which form the principal part of the British species, under three heads, viz., those which have the apex of the body more or less red, those which have that part white, and those in which the ground-colour of the body is yellow or buff: by this arrangement much repetition in the descriptions is avoided.

SECTION 1,—apex of the body red.*

B. lapidarius (female), black: the male is rather long and narrow; head and anterior and posterior portions of the thorax yellow.

This species, well known by the name 'red-tailed bee,' is one of the largest and commonest of the genus; the females are to be seen in the spring and summer months; in the autumn, when the males make their appearance, they are less common.

B. Ratellus (female), smaller and shorter in proportion than the last, from which it may moreover be distinguished by having red hair on the hinder tibiae.

B. Derhamellus, colour ashy-brown; thorax and abdomen each with a black fascia; most probably the male of the last described.

B. subinterruptus (female), black: anterior portion of the thorax yellow; abdomen with a subinterrupted fascia of the same colour towards the base.

B. pratorum, black: anterior portion of the thorax yellow.

B. Burrellanus (male), yellow: thorax with the central portion black; abdomen with a black fascia near the middle.

B. Cullumanus (male), like the last, but the fascia of the abdomen is very narrow, occupying only one segment.

B. Donovanellus (female), black: thorax with the anterior portion yellow; abdomen with the basal portion yellow. In the male the anterior portion of the thorax is obscurely coloured.

SECTION 2,—having the apex of the abdomen white.

B. terrestris.—This is the largest and most common of the yellow and black humble-bees; it has the anterior margin of the thorax and the segment next the basal one of the abdomen of a yellow or buff colour; the rest of the body is black, with the exception of the apex, which is sometimes of a dirty yellow colour and at others white.

The neuters of all the species are very variable in size, but in this there appears to be the greatest extreme; we have specimens which are scarcely as large as the common hive-bee.

B. Hortorum, black: thorax with the anterior and posterior portions yellow; abdomen with the base yellow; rather less than the preceding species.

B. Tunstallanus (female), black: thorax with the anterior and posterior margins narrowly edged with yellow.

The insect described by Kirby under the name of *Latreillella* has lately been discovered by Mr. Pickering to be the male of this species; it is of a pale yellow colour, with the central portion of the thorax and two indistinct fasciæ towards the base of the abdomen black.

B. Jonellus (male), yellow: thorax and abdomen each with a black fascia.

B. lucorum (male), yellow: thorax with the central portion black; abdomen with the two basal segments yellow, and the two following black, the remainder white.

SECTION 3,—ground-colour of the body yellow or buff.

B. Muscorum, yellow: thorax orange.

* By this we mean the colour of the hair with which the body is covered, the body itself being quite black in all the species.

B. floralis, yellow: abdomen with a black spot on each side of the second segment, the three following segments with their bases black.

B. Beckwithellus, pale buff colour: thorax and apex of the abdomen reddish yellow, the latter with a black fascia in the middle.

B. Curtisellus, like the last, but the abdomen is black, with the base of reddish-yellow.

B. Fosterellus: thorax buff-coloured, with the anterior part blackish; abdomen with three obscure black fasciæ.

Obs.—We have reason to believe the four last to be varieties of the same species.

B. sylvarum, yellowish white: thorax with a black fascia; abdomen with two black fasciæ; the apex red interspersed with white.

B. fragrans, bright yellow; thorax with a black fascia.

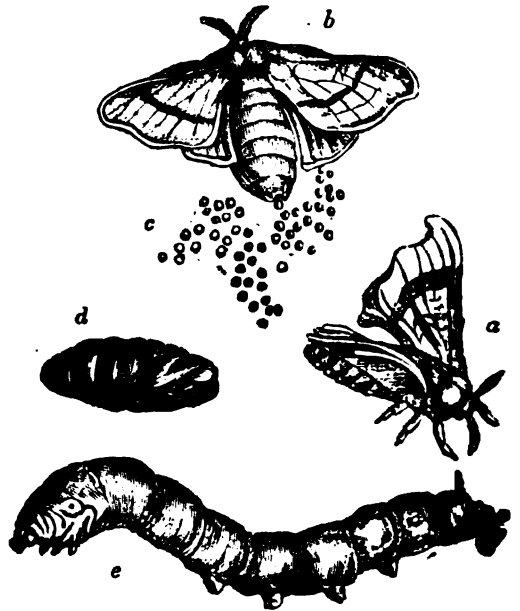
Of the above species *B. terrestris* and *Lapidarius* are the largest; *B. fragrans*, *Tunstallanus*, and *Hortorum*, are the next in size; all the rest of the species are nearly of a size, with the exception of *B. pratorum*, which see description.

For the habits of the species see HUMBLE-BEE, and for more detailed descriptions we refer our readers to Kirby's *Monographia Apum Angliæ*.

BOMBYCIDÆ (entomology), a family of the order Lepidoptera, belonging to the section Lepidoptera-nocturna of Latreille.

The principal characteristics of this family are their possessing only rudimentary maxillæ, remarkably small palpi, and bipectinated antennæ.

Some of the species fly very rapidly, and make their appearance in the day-time as well as in the evening. The caterpillars of most of the species are hairy (some produce great irritation to the hand when touched), and assume the pupa state in a cocoon spun for its protection. The pupa is simple.



a and b *Bombyx mori*; c the eggs; d the pupa; e silkworm or caterpillar.

One of the most interesting of the family is the *Bombyx mori*, well known as the moth to which the silkworm turns. This species, which was originally from China, is of a white or cream-colour, with a brown fascia and two or more waved lines of a deeper colour crossing the upper wings. In this country the eggs of this moth hatch early in May; the caterpillar or silkworm is at first of a dark colour, but soon becomes light, and in its tints much resembles the perfect insect, a circumstance common in caterpillars. Its proper food is the mulberry, though it will likewise eat the lettuce and some few other plants; on the latter however it does not thrive equally well, and the silk yielded is of a poor quality.

The silkworm is about eight weeks in arriving at maturity, during which period it changes its skin four or five times. When about to cast its skin it ceases to eat, raises the fore-part of the body slightly, and remains in perfect repose. In this state it is necessary that it should continue for some

little time, in order that the new skin, which is at this time forming, may become sufficiently mature to enable the caterpillar to burst through the old one. This operation, which is apparently one of considerable difficulty, is performed thus:—the fore-part of the old skin is burst; the silkworm then by continually writhing its body (but not moving from the spot) contrives to thrust the skin back to the tail, and ultimately to disengage itself altogether: this last part of the operation however is the most difficult, since it is no uncommon occurrence for them to die from not being able to disengage the last segment of the body from the old skin.

Those who have reared silkworms must have observed how large the head is in proportion to the body in those which have just changed their skins: this circumstance is worthy of observation, for in it will be found a most beautiful contrivance.

When the larva of an insect has just changed its skin, every part is soft, and in many cases (such as caterpillars) the greater portion of the body still remains in this flexible state; but the skin of the head and some few other parts, in all instances, soon become hardened, after which it never grows. The same happens with those larvæ which have the body in a great measure covered with hard plates, which circumstance leaves no parts to enlarge but such as are flexible. In the instance of a caterpillar the body increases in size rapidly after change of skin, but the head, it will be observed, does not enlarge, and although the body may have increased very much it does not appear that the skin has grown; it seems only to be stretched with the increase of size of the inner parts. In the case of those larvæ which have the body covered with hard plates, it is the skin between the plates that stretches to allow of growth in the inner parts, so that just before changing skin all the plates are considerably separated.

From the above we conclude that the external covering of insects does not grow at all, except at the time of repose previous to the casting off the old skin, after which operation the head, and those parts which soon become hard, are sufficiently grown to last until the next change; and also that the soft parts of the external covering will bear stretching to a certain extent and no further, when it becomes necessary that they should change that covering for a larger one. With respect to the silkworm and other caterpillars, an unobserving person would not readily understand how the head, which is much larger than the one the case of which has just been cast off, can have come out of it; but if the silkworm be examined just before it is about to change its skin, it will be seen that such is not exactly the case, for part of the new head may be seen thrust out behind the old one, so that the fore-part only is inclosed by the latter.

When full grown the silkworm commences spinning its web in some convenient spot, and as it does not change the position of the hinder portion of its body much, but continues drawing its thread from various points and attaching it to others, it follows that after a time its body becomes in a great measure inclosed by the thread. The work is then continued from one thread to another, the silkworm moving its head and spinning in a zigzag way, bending the fore part of the body back to spin in all directions within reach, and shifting the body only, to cover with silk the part which was beneath it. As the silkworm spins its web by thus bending the fore part of the body back, and moves the hinder part of the body in such a way only as to enable it to reach the farther back with the fore part, it follows that it incloses itself in a cocoon much shorter than its own body, for soon after the beginning the whole is continued with the body in a bent position. From the foregoing account it appears that with the most simple instinctive principles all the ends necessary are gained. If the silkworm were gifted with a desire for shifting its position much at the beginning of the work it could never inclose itself in a cocoon; but by its mode of proceeding, as above explained, it incloses itself in a cocoon which only consumes as much silk as is necessary to hold the chrysalis.

During the time of spinning the cocoon the silkworm decreases in length very considerably, and after it is completed, it is not half its original length; at this time it becomes quite torpid, soon changes its skin, and appears in the form of a chrysalis. The time required to complete the cocoon is about five days. In the chrysalis state the animal remains from a fortnight to three weeks; it then bursts its case and comes forth in the imago state, the moth having

previously dissolved a portion of the cocoon by means of a fluid which it ejects.

The moth is short-lived: the female, in many instances, dies almost immediately after she has laid her eggs; the male survives her but a short time.

It is a curious fact that all those animals which are most useful to man are likewise most manageable. There is scarcely a caterpillar which is so easily reared as that which turns to the silkworm-moth. [SILK.]

BOMBYCILLA (zoology). The name of a genus of tooth-billed birds (*Dentirostres*). Cuvier places the genus among the Dentirotal genera of his second order *Passereaux*; Latreille also arranges it under that order, but does not allow it to belong to the Dentirostres, and classes it among his first family, that of the broad-billed birds (*Latirostres*). Temminck, considering it to be an omnivorous bird, finds a place for it, under the name of *Bombycivora*, in his second order *Omnivores*. Vieillot's second order (*Sylvan Birds, Sylvicolæ*) contains two tribes; and in the sixteenth family (*Baccivori*, or berry-eaters) of the second tribe (*Anisodactyli*), the genus in question will be found. Vigors places it in the second tribe *Dentirostres* of his second order, *Insessores* or perching-birds; and, after some hesitation, and expressing his doubt whether its natural situation is not in the family *Merulidæ*, is inclined to arrange it provisionally among the *Pipridæ*, his last family of Dentirostres. Bonaparte makes it a genus of his family *Sericati*. Swainson, in *Fauna Boreali-Americana*, arranges it under his *Bombycillinae*, a sub-family belonging to the aberrant group of his *Ampehidæ*, or fruit-eaters; but, in giving his table of *Ampelidæ*, he expresses considerable doubts on the true nature of the aberrant divisions. Linnæus at one time made it a butcher-bird (*Lanius*), and afterwards an *Ampelis*. Brisson classed it among the thrushes (*Turdus*), and Illiger among the crows (*Corvus*).

The birds of this genus are known by the English names of *Wax-wings* or *Waxen-chatterers*; and the following are the principal generic characters according to Temminck:

Bill short, straight, elevated; upper mandible curved towards its extremity, with a strongly marked tooth.

Nostrils basal, ovoid, open, hidden by strong hairs directed forwards.

Feet, with three toes before and one behind, [the exterior toe connected (*soudé*) with the middle one.

Wings moderate, the first and second quills longest.

Only three species have been recorded. The first has a wide geographical range; the second is confined to North America, and the third is Oriental.

EUROPEAN WAX-WING OR CHATTERER.

This elegant species, which is also known by the English names of the *Bohemian Chatterer*, *Bohemian Wax-wing* and *Silk-tail*, is *Le Jaseur de Bohême* (Buffon, &c.), *Grand Jaseur* (Temminck) and *Geay de Bohême* of the French; *Garrulo di Boemia* of the Italians; *Röthlichgrauer Seidenschwanz* (Meyer), *Europäischer Seidenschwanz* and *Der Gemeine Seidenschwanz* (Bechstein) of the Germans; *Garrulus Bohemicus* of Gesner, *Bombycilla*, Schwenck., *Ampelis*, Aldrovand, *Bombycilla Bohemica* of Brisson; *Ampelis garrulus* of Linnæus; *Bombyciphora garrula*, Brehm; *Bombyciphora poliocælia* of Meyer; *Bombycivora garrula* of Temminck, and *Bombycilla garrula* of Vieillot.

In addition to the nomenclature above given, the bird is said to be named by the Italians in some localities *Becco-Frisone*, in others *Galletto del bosco*; and by the bird-catchers of Bologna *Uccello del mondo novo*; by the Germans *Zinzerelle*, *Wipstertz*, *Schnee-vogel* and *Schnee-Leschke*, and by those in the neighbourhood of Nuremberg *Beemerle* and *Behemle*; by the Swedes *Siden-swantz*; by the Bohemians *Brkoslaw*; and by the Poles *Jedwabniczka* and *Jemiolucha*.

That the Bohemian Chatterer was known to the ancients there can be little doubt; but a great deal of obscurity prevails as to the names by which it was distinguished. Some have taken it to be the *Incendiaria Avis* of Pliny (Book x, c. 13), the inauspicious bird, on account of whose appearance Rome more than once underwent lustration, but more especially in the consulship of L. Cassius and C. Marius, when the apparition of a great owl (*Bubo*) was added to the horrors of the year. Others have supposed that it was the bird of the Hercynian forest (Book x, c. 47), whose feathers shone in the night like fire. Aldrovandus, who collected the opinions on this point, has taken some pains to show

(that it could be neither the one nor the other. The worthy Italian gravely assures his readers that its feathers do not shine in the night; for he says he kept one alive for three months, and observed it at all hours (*quâvis noctis horâ contemplantus sum*).

It is by no means improbable that this bird was the *Γνάφαλος* (*Gnaphalus*) of Aristotle (*Hist. Anim.*, Book ix. a. 16).

The geographical range of the Bohemian Chatterer is extensive, comprehending a great portion of the arctic world. It appears generally in flocks, and a fatality was, at one time, believed to accompany their movements. Thus Aldrovandus observes that large flights of them appeared in February, 1530, when Charles V. was crowned at Bologna; and again in 1551, when they spread through the duchies of Modena, Piacenza, and other Italian districts, carefully avoiding that of Ferrara, which was afterwards convulsed by an earthquake. In 1552, according to Gesner, they visited the banks of the Rhine, near Mentz, in such myriads that they darkened the air. In 1571 troops of them were seen flying about the north of Italy, in the month of December, when the Ferrarese earthquake, according to Aldrovandus, took place, and the rivers overflowed their banks.

Necker, in his memoir on the birds of Geneva, observes that from the beginning of this century only two considerable flights have been observed in that canton, one in January, 1807, and the other in 1814, when they were very numerous, and, having spent the winter there, took their departure in March. In the first of those years they were scattered over a considerable part of Europe, and, early in January, were seen near Edinburgh. Savi observes that they are not seen in Tuscany except in very severe winters, and that the years 1806 and 1807 were remarkable for the number of them which entered Piedmont, especially the valleys of Lanzo and Suza.

It has been said that it is always rare in France, and that of late years it has become scarce in Italy and Germany; but Bechstein observes, that in moderate seasons it is found in great flights in the skirts of the forests throughout the greater part of Germany and Bohemia, and that it is to be seen in Thuringia only in the winter; if the season be mild, in very small numbers, the greater portion remaining in the north; if the weather be severe, it advances farther south.

The Bohemian Chatterer must be considered only as an occasional visitant to the British islands, though Pennant says that they appear only by accident in South Britain, but that about Edinburgh they come annually in February, and feed on the berries of the mountain-ash; adding, that they also appear as far south as Northumberland, and, like the fieldfare, make the berries of the white thorn their food: he records the death of one which was killed at Garthmeilo in Denbighshire, in a fir tree, during the severe frost of December, 1788. Latham, in a note to this statement, says, that the late Mr. Tunstall informed him that, in the winter of 1787, many flocks were seen all over the county of York, and that towards the spring a flock of between twenty and thirty were observed within two miles of Wycliffe, his place of residence. Bewick states that, in the years 1790, 1791, and 1803, several of them were taken in Northumberland and Durham, as early as the month of November. Solby says that, in the winter of 1810, large flocks were dispersed through various parts of the kingdom; and that, from that period, it does not seem to have visited our island till the month of February, 1822, when a few came under his inspection, and several were again observed during the severe storm in the winter of 1823. Montagu says that he received it out of Staffordshire, and that he has known others killed in the more southern counties in the autumn and winter. In Mr. Rennie's edition of the 'Ornithological Dictionary' (1833) it appears that one had been shot in the park of Lord Borington, at Saltram, in Devonshire, and that not less than twenty have been killed in the counties of Suffolk and Norfolk during the last three winters. Graves says, that about Christmas, 1803, a number were shot in the neighbourhood of Camberwell, from one of which, being but slightly wounded, his figure was taken. In Loudon's Magazine, where much valuable information is preserved, it is stated that a fine specimen was shot near Coventry, in December, 1830, where it appeared to associate with starlings, and that during the same month of the same year six were killed in the vicinity of Ipswich. From the same source we derive the following additional records.

The Bohemian wax-wing, or chatterer, was unusually

plentiful in the neighbourhood of Bury St. Edmunds, Suffolk in the few days in January, 1835, in which snow lay upon the ground. On the 19th, four were seen in Rushbrook; on the 21st, a party of nine or ten was observed in the neighbourhood of Roughtam; and on the same day one was shot at Liverpool, feeding on the hips (fruit) of a rose; and either two or three were seen in Ickworth Park. About the same time one was shot at Norton, and four were seen in Nowton, and one in the gardens of Hardwicke House. On the, I believe, 24th, five or six were seen feeding on the haws of hedges in the neighbourhood of Ixworth. The one shot at Norton had several haws in its stomach, as had another that was shot in the neighbourhood of Bungay. Two, at least, additional have been shot in or about Thetford. (Henry Turner, Curator of the Botanic Garden, Bury St. Edmunds, Jan. 30, 1835.)

In Worcestershire, a male was shot at Radford, near Evesham, and a female at Claines, both during the past winter; and of the two, deemed 'a fine pair,' the preserved forms are in the museum of the Worcester Natural History Society. (*Berrow's Worcester Journal*, April 16, 1835.)

A very fine individual (a male it was presumed to be), which had its colours remarkably bright and vivid, and the four central of its tail-feathers terminated each with a horny appendage, the colour of red sealing-wax, and identical in kind with that with which each of certain feathers in the wings is terminated, was killed near Harnaby Bridge, in the neighbourhood of Carlisle, Cumberland, on December 8, 1831. This was a second individual with appendages to certain feathers of the tail, which had been taken in the neighbourhood of Carlisle, Cumberland. (*Phil. Mag.*, Feb. 1832, p. 84.)

An individual was taken alive early this winter, 1834-35, with birdlime, near Netherwilton, Northumberland; and I saw it lately (April, 1835), very tame and healthy, in the possession of the captor, who feeds it chiefly with bread. Some other individuals, its companions, were shot, at about the same time, which he has preserved. (W. C. Trevelyan, Wallington, Northumberland.)*

In northern Russia, and the extreme north of Norway, according to Bonaparte, Prince of Musignano, they are seen in great numbers every winter, being observed there earlier than in temperate countries. In northern Asia and eastern Europe their migrations are tolerably regular. Very numerous flocks pass through Scania in November, and are again seen on their return in the spring.

But the species is not confined to Europe and Asia. 'By a singular coincidence,' says the author last quoted, ' whilst we were proclaiming this species as American, it was received by Temminck from Japan, together with a new species, the third known of the genus.' Bonaparte says that his best specimen was shot on the 20th March, 1827, on the Athabasca river, near the Rocky Mountains; and he observes that the species appears to be spread widely, as he had been credibly informed by hunters, that 'cedar-birds of a large kind' had been shot a little beyond the Mississippi; adding, that he is at a loss to conceive why it should never have been observed on this side of the last-mentioned river. Mr. Drummond, in the spring of 1826, saw it near the sources of the Athabasca; and Dr. Richardson observed it in the same season at Great Bear Lake, in lat. 65°, where a male, of which he gives a description, was shot on the 24th May of that year. 'Specimens,' writes Dr. Richardson, 'procured at the former place, and transmitted to England by the servants of the Hudson's Bay Company, were communicated by Mr. Leadbeater to the Prince of Musignano, who has introduced the species into his great work on the birds of the United States. In its autumn migration southwards, this bird must cross the territory of the United States, if it does not actually winter within it; but I have not heard of its having been hitherto seen in America to the southward of the fifty-fifth parallel of latitude.

The mountainous nature of the country skirting the Northern Pacific Ocean being congenial to the habits of this species, it is probably more generally diffused in New Caledonia and the Russian-American territories, than to the eastward of the Rocky Mountain chain. It appears in flocks at Great Bear Lake about the 24th of May, when the spring thaw has exposed the berries of the Alpine arbutus, marsh vaccinium, &c., that have been frozen and covered during winter. It stays only for a few days, and none of the Indians of that quarter with whom I conversed had

* *Loudon's Magazine* for Sept. 1836, p. 511.

seen its nests; but I have reason to believe that it retires in the breeding season to the rugged and secluded mountain limestone districts, in the sixty-seventh and sixty-eighth parallels, when it feeds on the fruit of the common juniper, which abounds in these places.' Dr. Richardson adds, that he observed a large flock of at least three or four hundred on the banks of the Saskatchewan, at Carlton House, early in May, 1827. They alighted in a grove of poplars, settling all on one or two trees, and making a loud twittering noise. They stayed only about an hour in the morning, and were too shy to allow him to approach within gunshot.

We have hitherto only spoken of these birds in a migratory state, and the question presents itself, where do they breed? To this no one has yet been able to give a satisfactory answer. Bonaparte thinks it probable that their chief place of abode is in the oriental parts of the old continent, and hazards an opinion that the extensive and elevated table-land of Central Asia is their principal rendezvous, whence, like the Tartars in former times, they make their irregular excursions. Temminck is obliged to say, 'Propagation inconnue,' adding an 'on dit,' that it makes its nest far up in the north, preferring mountainous countries, and building in the crevices of rocks. Bonaparte expresses his disbelief of this, judging from analogy. Bechstein says that it does not build in Germany when wild, but within the Arctic circle.

Bonaparte gives a very amiable character of these birds in a state of nature, attributing to them a particular sentiment of benevolence, even independent of reciprocal sexual attraction. 'Not only,' says the Prince, 'do the male and female caress and feed each other, but the same proofs of mutual kindness have been observed between individuals of the same sex.' Speaking of their habits he says, 'They always alight on trees, hopping awkwardly on the ground. Their flight is very rapid: when taking wing, they utter a note resembling the syllables *zi, zi, ri*, but are generally silent, notwithstanding the name that has been given them.' Bechstein says, 'when wild we see it in the spring eating, like thrushes, all sorts of flies and other insects; in autumn and winter, different kinds of berries; and in time of need, the buds and sprouts of the beech, maple, and various fruit-trees.' Willughby states that it feeds upon fruit, especially grapes, of which it is very greedy. 'Wherefore it seems to me,' he adds, 'not without reason, to be called by that name (*ampelis*).' Bonaparte makes their food to consist of different kinds of juicy berries, or of insects, observing that they are fond of the berries of the mountain-ash and *pyrolacea*, and that they are extremely greedy of grapes, and also, though in a less degree, of juniper and laurel berries, apples, currants, figs, and other fruits. He adds that they drink often, dipping their bills repeatedly.

In captivity its qualities do not appear to be very attractive, according to Bechstein, who says that nothing but its beauty and scarcity can render the possession of it desirable, for that it is a stupid and lazy bird. Indeed, he draws such a picture of its greediness and dirty habits that, if it be not overcharged, few, we should think, would wish to have it as an inmate. Leaving out the more unpleasant parts of his description, we take the following extract from his cage-birds or stove-birds:—'During the ten or twelve years that it can exist in confinement, and on very meagre food, it does nothing but eat and repose for digestion. If hunger induces it to move, its step is awkward, and its jumps so clumsy as to be disagreeable to the eye. Its song consists only of weak and uncertain whistling, a little resembling the thrush, but not so loud. While singing, it moves the crest, but hardly moves the throat. If this warbling is somewhat unmusical, it has the merit of continuing throughout every season of the year. When angry, which happens sometimes near the common feeding-trough, it knocks very violently with its beak. It is easily tamed.' The same author says, that in confinement the two universal pastes appear delicacies to it; and it is even satisfied with bran steeped in water. It swallows everything voraciously, and refuses nothing eatable, such as potatoes, cabbage, salad, fruit of all sorts, and especially white bread. It likes to bathe, or rather to sprinkle itself with water, for it does not wet itself so much as other birds.

It is taken in nooses, to which berries are fixed, which, for this purpose, says the author last quoted, 'should always be kept in store till February. It appears to be frightened at nothing, for it flies into nets and traps, though it sees its

companions caught and hanging and uttering cries of distress and fear.'

Description. Length about eight inches; the size altogether approaching that of a starling.

Male. Bill strong, black, except at the base, where the colour inclines to a yellowish white; nostrils hidden under small black feathers. Irides purplish-red. Chin and throat velvety black, as is also the streak (in the midst of which is the eye) passing from the bill to the hinder part of the head. Forehead reddish-brown. Head feathers long, silky, forming a reclining crest approaching to reddish-chestnut, which the bird can erect or depress at pleasure. Upper parts purplish-red, or vinaceous-brown dashed with ash-colour, the rump lightest. Breast and belly pale purplish-ash, tinged with pale brownish-red. Vent and under tail-coverts orange-brown, inclining to reddish-orange. Greater wing-coverts black, tipped with white. Lesser wing-coverts of a shade darker than the general tint of the upper plumage. Primaries black, with a bright-yellow spot near the white tips of their outer webs. Montagu says that the three first are tipped with white, and the others with yellow on their outer margins. Secondaries grey, tipped with white on the outer web, and seven or eight of them terminated with small flattish oval horny appendages, of the colour of red sealing-wax. Sometimes there are not more than five or six of these wax-like tips, and in Montagu's specimen there were five on one side and six on the other. Graves gives the number at from six to nine (Bechstein at from five to nine),* and mentions the specimen in Mr. Harworth's collection, which had some on the tail, which is black tipped with yellow, and dashed with ash-colour at the base. Shanks, toes, and claws, black.

Female. Generally similar to the male; but the yellow on the wings and tail is not so bright, nor are the wax-like appendages so large or so numerous.

Some have said that the female wants both the yellow and the wax-like ornaments. Graves says that the female has white on the wing where the male has yellow, and that she is wholly destitute of the waxen appendages. Some females may have been taken with the plumage last-mentioned; but in general, the first description will be found the most correct. Bonaparte's specimen shot on the Athabasca river was a female. It was, according to him, eight and a half inches in length, and fifteen in extent. The bill was three-quarters of an inch long, black, but paler at the base of the under mandible. There was no yellow whatever on the wing. The tail was tipped with pale-yellow for half an inch, and four only of the secondaries were furnished with the bright-red appendages. Bechstein says that the narrow wax-tips at the end of the tail denote that the bird is a very old male. The flesh of this species is said to be delicate food.



[*Nombyella Bohemica*, male.]

* In a fine specimen shot in January, 1816, by Mr. John Crosthwaite, of Mill Gash, in Thorntwaite, close to his own house, the secondaries were

AMERICAN WAX-WING.

The American wax-wing, or cedar-bird, was considered by some of the older naturalists to be identical with the European species from which it had degenerated. Latham was of this opinion which all now agree in considering erroneous. The specific differences are too strongly marked to admit of any doubt on the subject.

This species is the *Ampelis Garrulus* var. β . of the *Systema Naturæ*; *Garrulus Carolinensis*, *Le Jasseur de Caroline*, the *Chatterer of Catesby*; *Turdus Garrulus Carolinensis* of Klein; *Coquantotoll* of Hernandez; *Avis Americana cristata*, *Xomoll dicta* of Seba; *Chatterer of Carolina* of Edwards; *Cedar-bird*, *Ampelis Americana*, of Wilson; *Recollet** of the Canadian Voyageurs; *Bombycilla Carolinensis* of Brisson, Bonaparte, Audubon, and others. It is said to be found in the whole extent between Mexico and Canada, and parties are said occasionally to roam as far south as the forests of Guiana. In the United States it is a resident during the whole year, the northern and middle states being its more usual quarters in the summer, and the southern in the winter season. It is stated that the bird has been found on the north-west coast of America,† but its northern boundary appears to fall short of that of *Bombycilla Bohemica*. Say saw it near Winnipeg river, in latitude 50°, and Dr. Richardson states his belief that it has not been hitherto observed to the northward of the fifty-fourth parallel. He says that Mr. Drummond saw several small flocks on the south branch of the Saskatchewan on the 27th June, and gives a description of a male killed there in lat. 52½° on that day, 1827. He adds, that it frequents the northern shores of Lakes Huron and Superior in summer.

The cedar-birds utter a feeble lisping sound, and 'fly,' says Wilson, 'in compact bodies of from twenty to fifty; and usually alight so close together on the same tree, that one half are frequently shot down at a time. In the months of July and August, they collect together in flocks, and retire to the hilly parts of the state, the Blue Mountains, and other collateral ridges of the Alleghany, to enjoy the fruit of the *Vaccinium uliginosum*, whortleberries, which grow there in great abundance, whole mountains for many miles being almost entirely covered with them; and where, in the month of August, I have myself found the cedar-birds numerous. In October they descend to the lower cultivated parts of the country, to feed on the berries of the sour gum, and red cedar, of which last they are immoderately fond; and thirty or forty may sometimes be seen fluttering among the branches of one small cedar-tree, plucking off the berries. . . . In the fall, and beginning of summer, when they become very fat, they are in considerable esteem for the table; and great numbers are brought to the market of Philadelphia, where they are sold at from twelve to twenty-five cents per dozen. During the whole winter and spring they are occasionally seen; and about the 25th of May appear in numerous parties, making great havoc among the early cherries, selecting the best and ripest of the fruit.' Audubon says that they reach Louisiana about the beginning of November, and retire towards the middle districts in the beginning of March. 'The holly,' writes the author last quoted, 'the vines, the persimon, the pride of China, and various other trees, supply them with plenty of berries and fruits, on which they fatten, and become so tender and juicy as to be sought by every epicure for the table. I have known an instance of a basketful of these little birds having been forwarded to New Orleans as a Christmas present. And delicious these fruit-eating birds (for such is their general diet, albeit they are said to be excellent fly-catchers) undoubtedly are; though Hernandez, who met with them near Tetzeuco (apud Tetzeoquenses), says that neither in their song nor in the flavour of their flesh are they better than other small birds, 'neque est cantu aut nutrimento cæteris aviculis commendatior.' Their appetite is extraordinary: 'they gorge themselves,' observes Audubon, 'to tipped with yellow, and there were five only of the appendages or tips on one wing, and seven on the other. It is added that this is the only individual which has been shot in this part since 1803. (London's Magazine for 1833, quoting the *Carlisle Journal*.)

* Probably, as Latham observes, from the colour and appearance of its crest resembling the hood (*oculus*) of an order of friars of that denomination. This crest the bird can lower and contract at pleasure, so that it can hardly be observed. In some parts of the country they are called cherry-birds and crow-birds.

† Richardson well observes, that Cook and others who have made this right easily mistake the preceding species (*B. Bohemica*) for that

such excess, as sometimes to be unable to fly, and suffer themselves to be taken by the hand. Indeed I have seen some which, although wounded and confined in a cage, have eaten of apples until suffocation deprived them of life, in the course of a few days. When opened afterwards, they were found to be gorged to the mouth.'

Notwithstanding this greediness they are, according to some writers, remarkable for their social and kindly disposition in a state of nature. Nuttall, on the authority of an eye-witness, states that one among a row of these birds seated upon a branch, darted after an insect, and offered it to his associate when caught, who very disinterestedly passed it to the next, and each delicately declining the offer, the morsel went backwards and forwards before it was appropriated.

After fattening on the fruits of May and early June they begin to turn their attention to the continuation of the species, and commence, about the tenth or twelfth of the latter month, building a nest large in proportion to the bird, sometimes in their favourite cedar-tree (*Juniperus Virginiana*, Willd.), but more frequently in the orchard, generally choosing a forked or horizontal branch of an apple-tree some ten or twelve feet from the ground. Outwardly and at bottom is laid a mass of coarse dry stalks of grass; the inside is lined entirely with very fine stalks of the same material. The eggs are three or four, of a dingy bluish white, thick at the great end, tapering suddenly, and becoming very narrow at the other, marked with small roundish spots of black of various sizes and shades; and the great end is of a pale dull purple tinge, marked likewise with touches of various shades of purple and black. About the last week in June the young are hatched, and are at first fed on insects and their larvæ; but as they advance in growth, on berries of various kinds. 'The female,' says Wilson, from whose personal observation the foregoing facts are given, 'if disturbed, darts from the nest in silence to a considerable distance; no notes of wailing or lamentation are heard from either parent, nor are they even seen, notwithstanding you are in the tree examining the nest and young. . . . The season of love, which makes almost every other small bird musical, has no such effect on them; for they continue at that interesting period as silent as before.'

Nuttall, who observes that they are so sociable even in the breeding season that several nests may be observed in the same vicinity, gives the following interesting account of their nidification:—'Two nests in the Botanic Garden at Cambridge were found in small hemlock trees,* at the distance of sixteen or eighteen feet from the ground, in the forks of the main branches. One of these was composed of dry coarse grass, interwoven roughly with a considerable quantity of dead hemlock sprigs, further connected by a small quantity of silk-weed † lint, and lined with a few strips of thin grape-vine bark, and dry leaves of the silver fir. In the second nest the lining was merely fine root fibres. On the 4th of June this nest contained two eggs: the whole number is generally about four or five; these are of the usual form, not remarkable for any disproportion at the two ends, of a pale clay white, inclining to olive; with a few well-defined black or deep amber spots at the great end, and with others seen, as it were, beneath the surface of the shell. Two or three other nests were made in the apple-trees of the adjoining orchard, one in a place of difficult access, the other on a depending branch easily reached by the hand. These were securely fixed horizontally among the ascending twigs, and were formed externally of a mass of dry wiry weeds; the materials being firmly held together by a large quantity of cordweed down,‡ in some places softened with glutinous saliva, so as to be formed into coarse connecting shreds. The round edge of the nest was made of coils of the wiry stolons of a common cinquefoil,§ then lined with exceedingly fine root-fibres; over the whole, to give elasticity, were laid fine stalks of a slender *Junca*, or minute rush. In these nests the eggs were, as described by Wilson (except as to form), marked with smaller and more numerous spots than the preceding. From the lateness of the autumn, at which period incubation is still going on, it would appear that this species is very prolific, and must have at least two hatches in a season; for as late as the 7th of September a brood in this vicinity were yet in the nest. The period of sitting is about fifteen or sixteen days.'

* *Abies Canadensis*, L.
† *Gnaphalium plantagineum*.

‡ *Asclepias*.
§ *Potentilla simplex*.

Having endeavoured to give the reader some idea of the habits of the cedar-bird in a state of nature, we proceed to lay before him Nuttall's account of its manners in captivity:—

'A young bird, from one of the nests described in the hemlock, was thrown upon my protection, having been by some means ejected from his cradle. In this critical situation however he had been well fed or rather gorged with berries, and was merely scratched by the fall he had received. Fed on cherries and mulberries he was soon well fledged, while his mate in the nest was suffered to perish by the forgetfulness of his natural protectors. Coeval with the growth of his wing-feathers, were already seen the remarkable red waxen appendages, showing that their appearance indicates no particular age or sex; many birds, in fact, being without these ornaments during their whole lives. I soon found my interesting *protegee* impatient of the cage, and extremely voracious, gorging himself to the very mouth with the soft fruits on which he was often fed. The throat, in fact, like a crow, admits of distention, and the contents are only gradually passed off into the stomach. I now suffered the bird to fly at large, and for several days he descended from the trees in which he perched to my arm for food; but the moment he was satisfied he avoided the cage, and appeared by his restlessness unable to survive the loss of liberty. He now came seldomer to me, and finally joined the lisping muster cry of *tze, tze, tze*, and was enticed away, after two or three attempts, by his more attractive and suitable associates. When young, nature provided him with a loud impatient voice, and *té-did, té-did, hai-té-did* (often also the clamorous cry of the young Baltimore) was his deafening and almost incessant call for food. Another young bird of the first brood, probably neglected, cried so loud and plaintively to a male Baltimore bred in the same tree, that he commenced feeding it. Mr. Winship of Brighton informs me that one of the young cedar-birds who frequented the front of his house in quest of honey-suckle berries, at length, on receiving food, probably also abandoned by his roving parents, threw himself wholly on his protection. At large, day and night, he still regularly attended the dessert of the dinner-table for his portion of fruit, and remained steadfast in his attachment to Mr. Winship till killed by an accident, being unfortunately trodden under foot.'



[*Bombycilla Carolinensis*, male.]

The following is Wilson's description:—Length seven inches, extent eleven inches; head, neck, breast, upper

part of the back and wing-coverts, a dark fawn colour; darkest on the back, and brightest on the front; head ornamented with a high pointed, almost upright crest; line from the nostril over the eye to the hind head velvety black, bordered above with a fine line of white, and another line of white passes from the lower mandible; chin black, gradually brightening into fawn colour, the feathers there lying extremely close; bill black, upper mandible nearly triangular at the base, without bristles, short, rounding at the point, where it is deeply notched; the lower scolloped at the tip, and turning up; tongue as in the rest of the genus, broad, thin, cartilaginous and lacerated at the end; belly yellow; vent white; wings deep-slate, except the two secondaries next the body, whose exterior vanes are of a fawn colour, and interior ones white, forming two whitish strips there, which are very conspicuous; rump and tail-coverts pale light blue, tail the same, gradually deepening into black, and tipped for half an inch with rich yellow. Six or seven, and sometimes the whole nine, secondary feathers of the wings are ornamented at the tips with small red oblong appendages, resembling red sealing-wax; these appear to be a prolongation of the shafts, and to be intended for preserving the ends, and consequently the vanes of the quills from being broken and worn away by the almost continual fluttering of the bird among the thick branches of the cedar. The feathers of those birds which are without these appendages are uniformly found ragged on the edges; but smooth and perfect in those on whom the marks are full and numerous. These singular marks have been considered as belonging to the male alone, from the circumstance perhaps of finding female birds without them. They are however common to both male and female. Six of the latter are now lying before me, each with large and numerous clusters of eggs, and having the waxen appendages in full perfection. The young birds do not receive them until the second fall,* when, in moulting time, they may be seen fully formed, as the feather is developed from its sheath. I have once or twice found a solitary one on the extremity of one of the tail-feathers. The eye is of a dark blood colour; the legs and claws black; the inside of the mouth orange; gap wide; and the gullet capable of such distention as often to contain twelve or fifteen cedar-berries, and serving as a kind of craw to prepare them for digestion. The chief difference in the plumage of the male and female consists in the dullness of the tints of the latter, the inferior appearance of the crest, and the narrowness of the yellow bar at the tip of the tail.'

Audubon gives the following dimensions:—Length six inches and three-fourths, extent of wings eleven, bill along the ridge five-twelfths, along the gap three-fourths, tarsus three-fourths. The length of the male described by Dr. Richardson was seven inches six lines. The Doctor observes that a female procured by Mr. Drummond wanted entirely the waxen appendages to the secondaries, and says that a young bird in Mr. Swainson's collection has the upper plumage of the head and body of a hair-brown colour, paler on the neck and rump: the wings and tail as in the mature bird, except that the former want the waxen appendages. The black frontal mark is narrower, and there is no black on the chin. The under plumage is mostly hair-brown, edged with yellowish-grey, the belly and vent being straw-yellow.

ASIATIC WAX-WING.

The discovery of the *Red-winged Chatterer*, or *Japanese Wax-wing*, is one of the fruits of Dr. De Siebold's scientific mission to Japan by the government of the Netherlands. In size it bears a greater resemblance to the *Cedar-bird* than to the *Bohemian Wax-wing*, but differs from both in the nakedness of the nostrils (which are not hidden by the small feathers of the front, like the nostrils of the other two species of this small but natural group), in the length of the crest, and the beautiful black plumes with which it is ornamented, and by the entire absence of the wax-like appendages that tip the secondaries of its congeners.

The length of the *Japanese Wax-wing* is six inches and six lines. The base of the bill is bordered by a black band, which passes to the back of the head, surrounding the eye in its way, and terminates in the lower crest-feathers, which are of the same colour throughout; the chin and throat are black; the crest is long, composed above of feathers of an ashy-reddish colour with an inferior layer of the black

* But see Nuttall's account above.

plumes already alluded to; the breast, upper parts, and wing-coverts are of a brownish-ash, and a red band traverses the wing about the middle of it; all the quills are of an ashy-black, the greater quills terminated with black and tipped with white; the tail is of an ashy-black, tipped with vivid red; the middle of the belly is of a whitish-yellow; and the lower tail-coverts chestnut; shanks and feet black.

The species is found in the neighbourhood of Nangasaki.

Temminck, to whom we are indebted for our knowledge of the bird, which is described and figured in his *Planches Coloriées*, says that there is a specimen in the galleries of the Museum of the Pays-Bas, and another in the collection of M. Blomhof, the resident at Japan; and he observes that the absence of the nostril-plumes furnishes a proof, also afforded in the genera *Corvus* and *Garrula*, in contradiction to the opinion of those systematists who would separate the omnivorous birds with covered nostrils from those which have those organs smooth or naked, and divide them into distinct groups. He also considers the proper position of the genus to be near the *Pirrolles* (Kitta), and the *Rolles* (*Colaris* of Cuvier, *Eurystomus* of Vieillot).



[*Bombycilla phœnicoptera*, male.]

BOMBYLIDÆ (entomology), a family of insects of the order Diptera, distinguished chiefly by having a long proboscis. The body is short and very hairy. Antennæ moderate, four-jointed, the basal joint long, second very short, third longest, the apical joint minute and tapering to a fine point. The legs are long and very slender. Wings horizontal.

The species of this tribe are all remarkable for their great swiftness of flight: two species of the genus *Bombylius* are not uncommon in open parts of woods, frequenting sunny banks, where they may be seen, in the month of April, hovering over flowers from which they sip the sweets by means of their long proboscis, which enables them to do this without settling on the flowers.

At one time they will be seen apparently quite motionless in the air—for their wings vibrate so rapidly that they cannot be discerned—a moment after they will make their appearance at a few yards distance, having darted from one spot to the other with such rapidity that the eye cannot follow them. In their flight they emit a humming sound.

The two species here spoken of are *B. major* and *medius*; they are about one-third of an inch long and of a brown colour: the former has the anterior part of its wings clouded with an opaque brown colour, and the posterior part transparent—the latter has the wings adorned with numerous brown spots, and their anterior portion but slightly clouded.



[*Bombylius medius*.]

Mr. Stephens enumerates seven species of this genus as indigenous to this country: they are sometimes called humble-bee flies.

BONA, a corruption of the antient name *Hippona*, called by the Arabs *Beled el Aneb*, or 'country of the jujubes,' is a seaport town of the regency of Algiers, in the beylik or province of Constantina, in 37° N. lat. and 8° 15' E. long., and about 265 miles E. of Algiers. It lies on the west side of a bay in which there is good anchorage. The harbour of Bona is now choked up with mud, but there are good landing-places in the vicinity of the town. The *Seibooa*, a considerable river, enters the sea about two miles to the S.E. of Bona. Between the town and the river is a marsh, which is crossed by two small rivers, *Wadi el Daab* and *Wadi el Boojimah*, which flow into the *Seibooa* just above its entrance into the sea. This marsh is believed to have been the antient harbour of *Hippo Regius*, the scanty remains of which town are seen about a mile and a half south of Bona. Between the walls of Bona and the marsh are gardens planted with jujube-trees, and to the west and south-west is a plain which extends far into the interior in the direction of Constantina. Bona is built at the foot of a hill which rises to the north and north-west of the town, and which forms the extremity of a ridge which runs westwards parallel to the sea, as far as the gulf of *Stora*. On the summit of the hill and about 500 yards above the town is the *Casabah*, or citadel, which is strong by its situation. The town itself is surrounded by a wall with towers. An aqueduct which brought water into the town has been cut off by the Arabs since the French occupation of the place. Previous to that event Bona contained between three and four thousand inhabitants, and carried on a considerable trade by sea; it exported cattle, corn, wool, hides, wax, and other produce. It was occupied by the French in 1830, but soon after was evacuated, when many of the inhabitants emigrated. It was again occupied in 1831, but after a few months a revolt among the inhabitants and the Turkish garrison in the *Casabah* obliged the French to evacuate the place a second time. In 1832 the Arabs and Kabyles, on the arrival of the French force by sea, set fire to the town and left it. The French again took possession of the place, but the country around continues hostile to them. Through all these vicissitudes the population of Bona has dwindled away to a few hundred individuals besides the French garrison. (Shaw's *Pichon, Alger sous la Domination Française*; Berthelot's *Dix-huit Mois à Alger*.) Along the coast eastward of Bona were the French settlements of *La Calle* and *Bastion de France*, which France retained by antient treaties with the regency of Algiers and for the protection of the coral fishery, which is carried on along this coast chiefly by French and Italian boats. These settlements however were destroyed by the late *Dey Hussein* in 1827 in consequence of the breaking out of hostilities. In the *Excursions in the Mediterranean*, by Major Sir Greville Temple, 1835, there is an account of Bona in 1832, and of the ruins of *Hippo Regius*, which he visited.

BONACCI, LEONARDO. [LEONARD of PISA.]

BONAPARTE, NAPOLEONE, was born at Ajaccio in the island of Corsica, the 15th of August, 1769. He was the second son (his brother Joseph being the eldest) of Carlo Bonaparte and of Letizia Ramolini, both natives of Corsica. The house in which he was born forms one side of a court leading out of the *Rue Charles*. [AJACCIO.] In his baptismal register, which is in the parish books, his name is written Bonaparte, but his father generally signed himself Buonaparte, a mode of spelling which seems more accordant with Italian orthoepy, although there are other Italian names in which the first component part is written and pronounced *bona*, as, for instance, *Bonaventura*, *Bonaccorsi*, &c., besides common nouns, similarly compounded.

such as *bonarieta*, *bonaccia*, &c. This appears in itself a question of little moment, but it has been made the subject of much controversy, to which a sort of national importance has been given, as if the dropping of the *u* had been done for the purpose of Frenchifying the name. (Louis Bonaparte's *Réponse à Sir Walter Scott*.) Bonaparte being a family name, the correctness of the spelling must depend upon custom, and we find that Napoleon after he became general of the army of Italy always signed his name without the *u*, probably, as Bourienne observes, because it was a shorter way of signing, and probably also because it was better adapted to French pronunciation; it corresponded likewise to the common way of speaking of most Italians, who, with the exception of the Tuscans, pronounce in familiar conversation 'bono' instead of 'buono.' Napoleon's name first became known to the world as Bonaparte, as such it is registered in his proclamations, dispatches, and other documents, and as such therefore it ought to be written in history. His brothers have likewise adopted the same way of writing it.

Napoleon's father's family was originally from Tuscany, but had been settled in Corsica for several generations. There is a comedy written by one of his ancestors, Niccolò Buonaparte of San Miniato, citizen of Florence, styled 'La Vedova,' Florence, 1568 and 1592. There is likewise a narrative of the pillage of Rome under Charles V., written by a Jacopo Buonaparte, 'Ragguaglio Storico del Sacco di Roma dell' anno 1527,' Cologne, 1736. Charles, Napoleon's father, was educated at Pisa for the profession of the law. Some relatives of the family still lived in Tuscany, and one of them was canon of San Miniato in Napoleon's time. Before the birth of Napoleon, his father had served under Paoli in the defence of his country against the French, to whom the Genoese had basely sold the island. The entire submission of Corsica to France took place in June, 1769, about a month before Napoleon's birth, who therefore, legally speaking, was born a subject of France. In the following September, when Count Marboeuf, the French commissioner, convoked by the king's letters patent the States of Corsica, consisting of three orders, nobility, clergy, and commons, the family of Bonaparte, having shown their titles, was registered among the nobility; and Charles, some years after, repaired to Paris as member of a deputation of his order to Louis XVI. He was soon after appointed assessor to the judicial court of Ajaccio. He was then in straitened circumstances, as he had spent most of his little property in a bad speculation of some salt-pans, after having previously lost a lawsuit against the Jesuits about an inheritance which he claimed. Through Count Marboeuf's interest he obtained the admission of his son Napoleon to the military school of Brienne as a king's pensioner. Napoleon left Corsica for Brienne, when he was in his tenth year, in April, 1779. At Brienne, where he passed five years and a half, he made great progress in mathematics, but showed less disposition for literature and the study of languages. Pichegru was for a time his monitor in the class of mathematics. The annual report made to the king by M. de Keralio, inspector general of the military schools of France, in 1784, has the following remarks on young Napoleon:—'Distinguished in mathematical studies, tolerably versed in history and geography, much behind in his Latin and in belles lettres, and other accomplishments; of regular habits, studious and well behaved, and enjoying excellent health.' (Bourienne's *Mémoires*.) Much has been said of young Napoleon's taciturnity and moroseness while at school. Bourienne, who was his schoolfellow, states the facts very simply. Napoleon was a stranger, for the French considered the Corsicans as such; he spoke his own dialect, until he learnt French at the school; he had no connexions in France, he was comparatively poor, and yet proud-minded, as Corsicans generally are; the other boys, more fortunate or more lively in their disposition, teased him and taunted him, and therefore he kept himself distant and was often alone. But that he was susceptible of social and friendly feelings towards those who showed him sympathy, his intimacy with Bourienne sufficiently proves. Many stories have also been told of his assuming an authority over his comrades, showing a precocious ambition, and an instinct for command; but these are flatly contradicted by Bourienne, with the exception that in one instance when the snow had fallen very thick on the ground, and the boys were at a loss what to do to amuse themselves, he proposed to make entrenchments with the

snow, and to perform a sham attack, of which he was the leader.

There was nothing extraordinary in young Napoleon's school life; he was a clever, steady, studious lad, and nothing more. The school of Brienne was under the direction of the monks of the order of St. Francis de Paula, called 'Minimi,' and Bourienne speaks rather indifferently of their learning and system of education, though the teacher of mathematics seems to have been a favourable exception. Bourienne also states that Napoleon had made more proficiency in history than the report above mentioned gives him credit for: his favourite authors were Cæsar, Plutarch, and Arrian; the last two he probably read in Latin, or perhaps French translations, for he does not appear to have studied Greek.

Napoleon left Brienne in October, 1784: some say in 1783; but Bourienne is positive as to the date '17th October, 1784, after Napoleon had been five years and six months at Brienne,' and he accompanied him part of the way to Paris, with four of his companions, to proceed to the military school there, to continue his course of studies, until he had attained the age required for entering the army. The Paris school, and the students' manner of living, were on an expensive footing, which shocked young Napoleon, who wrote to Father Berton, his superior at Brienne, a long letter, in which he forcibly exposed the error of such a system of education, as luxury and comforts were a bad preparation for the hardships and privations attendant on the military profession. Bourienne gives a copy of this remarkable letter. In the regulations which he afterwards drew up for his military school at Fontainebleau, Napoleon followed the principles he had thus early manifested. Napoleon's spirit of observation, his active and inquisitive character, his censorious frankness, would appear to have excited the attention of the superiors of the Paris school, who hastened the epoch of his examination, as if anxious to get rid of a troublesome guest. He was likewise remarked for the wild energy and strange amplifications in his style of expressing himself when excited, a peculiarity which distinguished many of his subsequent speeches and proclamations. In September, 1785, he left the school, and received his commission as sub-lieutenant in the regiment of artillery de la Fere, and was soon after promoted to a first lieutenancy in the artillery regiment of Grenoble, stationed at Valence. His father had just died at Montpellier of a scirrhus in the stomach. An old great uncle, the Archdeacon Lucien of Ajaccio, now acted as father to the family; he was rich, and Charles had left his children poor. Napoleon's elder brother Joseph, after receiving his education at the College of Autun in Burgundy, returned to Corsica, where his mother, sisters, and younger brothers resided, as well as a half-brother of his mother, of the name of Fesch, whose father had been an officer in a Swiss regiment in the Genoese service, formerly stationed in Corsica. Napoleon, while at Valence with his regiment, was allowed 1200 francs yearly from his family, probably from the archdeacon, which, added to his pay, enabled him to live comfortably and to go into company. He appears to have entered cheerfully into the sports and amusements of his brother officers, while at the same time he did not neglect improving himself in the studies connected with his profession. While at Valence he wrote a dissertation in answer to Raynal's question, 'What are the principles and institutions by which mankind can obtain the greatest possible happiness?' He sent his MS. anonymously to the Academy of Lyons, which adjudged to him the prize attached to the best essay on the subject. Many years after, when at the height of his power, he happened to mention the circumstance, and Talleyrand having sought the forgotten MS. among the archives of the Academy, presented it to him one morning. Napoleon, after reading a few pages of it, threw it into the fire, and no copy having been taken of it, we do not know what his early ideas might have been about the happiness of mankind. (Las Cases' *Journal*, vol. i.) Napoleon had become acquainted with Raynal while at Paris. Having made an excursion from Valence to Mont Cenis, he designed writing a 'sentimental journey,' in imitation of Sterne's work, translations of which were much read in France at the time, but he ultimately resisted the temptation. The first outbreaking of the Revolution found him at Valence with his regiment. He took a lively interest in the proceedings of the first National Assembly. The officers of his regiment, like those of the army in general, were divided into royalists and democrats;

several of the former emigrated to join the Prince of Condé. Napoleon however refused to follow the same course: he took the popular side, and his example and his arguments influenced many of his brother officers in the regiment. In 1792 Napoleon became a captain in the regiment of Grenoble artillery (Las Cases, vol. i.), his promotion being favoured probably by the emigration of so many officers. By others it is stated that he was made a captain in July, 1793, after his return from Corsica. He however was at Paris in 1792, and there met his old friend Bourienne, with whom he renewed his intimacy. He appears to have been then unemployed, probably unattached, while the army was undergoing a new organization. Napoleon and Bourienne happened to be, on the 20th of June, 1792, at a coffee-house in the street St. Honoré, when the mob from the faubourgs (a motley crowd armed with pikes, sticks, axes, &c.) were proceeding to the Tuileries. 'Let us follow this *canaille*,' whispered Napoleon to his friend. They went accordingly, and saw the mob break into the palace without any opposition, and the king afterwards appear at one of the windows with the red cap on his head. 'It is all over henceforth with that man!' exclaimed Napoleon; and returning with his friend to the coffee-house to dinner, he explained to Bourienne all the consequences he foresaw from the degradation of the monarchy on that fatal day, now and then exclaiming indignantly, 'How could they allow those despicable wretches to enter the palace! why, a few discharges of grape-shot amongst them would have made them all take to their heels; they would be running yet at this moment!' He was collected and extremely grave all the remainder of that day; the sight had made a deep impression upon him. He witnessed also the scenes of the 10th of August, after which he left Paris to return to his family in Corsica. General de Paoli then held the chief authority in that island from the king and the French National Assembly, and Napoleon was appointed by him to the temporary command of a battalion of national guards. Paoli had approved of the constitutional monarchy in France, but not of the excesses of the Jacobins, nor of the attempts to establish a republic. Factions had broken out in Corsica also, which Paoli endeavoured to repress. In January, 1793, a French fleet, under Admiral Truguet, sailed from Toulon, for the purpose of attacking the island of Sardinia. Napoleon, with his battalion, was ordered to make a diversion by taking possession of the small islands which lie on the northern coast of Sardinia, which he effected; but Truguet's fleet having been repulsed in the attack upon Cagliari, Napoleon returned to Corsica with his men. Paoli had now openly renounced all obedience to the French Convention, and called upon his countrymen to shake off its yoke. Napoleon, on the contrary, rallied with the French troops under Lacombe St. Michel and Saliceti, and he was sent with a body of men to attack his native town Ajaccio, which was in possession of Paoli's party. He however did not succeed, and was obliged to return to Bastia. The English fleet soon after appeared on the coast, landed troops, and assisted Paoli, and the French were obliged to quit the island. Napoleon also left it about May, 1793, and his mother and sisters with him. After seeing them safe to Marseilles, he went to join the 4th regiment of artillery, which was stationed at Nice with the army intended to act against Italy. So at least his brother Louis says, but from Las Cases' account it would appear that he repaired to Paris to ask for active employment. It was during his short residence at Marseilles and in the neighbourhood, that he wrote a political pamphlet, called *Le Souper de Beaucaire*, a supposed conversation between men of different parties: a Marseillaise, a man of Nîmes, a military man, and a manufacturer of Montpellier. Bonaparte speaks his own sentiments as the military man, and recommends union and obedience to the Convention, against which the Marseillaise were then in a state of revolt. This curious pamphlet became very rare afterwards. Napoleon was said to have suppressed it. Bourienne gives a copy of it from a MS. given to him by Bonaparte in 1795. His language was then strongly republican, though not of that turgid absurd strain which was then so much in vogue, and of which some specimens, signed Brutus Bonaparte, appeared in the papers of the day. Napoleon, in his memoirs, disavows these, and says that 'perhaps they were the productions of his brother Lucien, who was then a much more violent democrat than himself.'

Bonaparte was at Paris in September, 1793. Being

known as a good artillery officer, he was sent to join the besieging army before Toulon, with the rank of lieutenant-colonel of artillery, and with a letter for Cartaux, the republican general, a vain, vulgar, and extremely ignorant man. Napoleon himself has given, in Las Cases' journal, a most amusing account of his first interview with Cartaux, of the wretched state in which he found the artillery, of the total want of common sense in the dispositions that had been made for the attack, of his own remonstrances, of his difficulty in making Cartaux understand the simplest notions concerning a battery, &c. At last, luckily for him, Gasparin, a commissioner from the Convention, arrived at the camp. He had seen a little service, and understood Bonaparte's plain statements. A council of war was assembled, and although the orders of the Convention were to attack Toulon and carry the town, Napoleon succeeded in persuading them to attack first the outer works that commanded the harbour, the taking of which would insure the surrender of the place. It was decided that Bonaparte's plan should be adopted, even at the serious risk of incurring the displeasure of the Convention. Soon after, Cartaux was recalled, and another mock general, a physician, was sent in his place, but he was soon frightened away by the whistling of the shots. Dugommier, a brave veteran, then came to command the besieging army, and he and Bonaparte agreed perfectly. Napoleon constructed his batteries with great skill, and having opened his fire with great effect, the works which commanded the harbour were carried by the French, after a sharp resistance from the English, in which the British commander, General O'Hara, was taken prisoner, and Bonaparte received a bayonet wound. Upon this the evacuation of the place was resolved upon by the allies, as Bonaparte had foreseen. A scene of confusion, destruction, and conflagration took place, which it is not within our object to dwell upon: the English, Spanish, and Neapolitan fleets sailed out of the harbour, carrying along with them about 14,000 of the inhabitants, whose only safety was in flight. The deputies of the Convention, Barras, Freron, Fouché, and the younger Robespierre, entered Toulon, and exercised their vengeance upon the few that remained, 400 of whom were assembled in the square and exterminated by grape-shot. Bonaparte says that neither he nor the regular troops had anything to do with this butchery, which was executed by what was called 'the revolutionary army,' a set of wretches, the real sans culottes of Paris and other towns, who followed the army as volunteers.

Throughout that frightful period which has been styled 'the reign of terror,' it was not, generally speaking, the officers of the regular army, but the civilians, the deputies of the Convention attached to the armies, who directed and preided at the massacres. There is an atrocious letter by Fouché to Collet d'Herbois, testifying his joy at the extermination of the rebels; and another from Saliceti, Barras, and Freron, jointly expressing the same sentiments. (See Napoleon's *Memoirs*, by Gourgaud, vol. i. Appendix.)

In consequence of his services at the taking of Toulon, Bonaparte was recommended by General Dugommier for promotion, and was accordingly raised to the rank of brigadier-general of artillery, in February, 1794, with the chief command of that department of the army in the south. In this capacity he inspected the coasts, ordered the weak points to be fortified, strengthened the fortifications already existing, and displayed his ability in these matters. He then joined the army under General Dumorbion, which was stationed at the foot of the Maritime Alps, and with which he made the campaign of 1794 against the Piedmontese troops. In that campaign, the French disregarding the neutrality of Genoa, and advancing by Ventimiglia and San Remo, turned the Piedmontese position at Saorgio, obtained possession of the Col de Tende, and penetrated into the valleys on the Piedmontese side of the Alps. A battle was fought at Cairo, in the valley of the Bormida, 21st September, in which the French had the advantage. But the rainy season coming on, terminated the campaign, in which Bonaparte had taken an important part, together with Massena.

Previous however to the battle of Cairo, Bonaparte had run considerable risk from the factions that divided France. On the 13th July, 1794, the Deputies of the Convention who were superintending the operations of the army gave him a commission to proceed to Genoa, with secret instructions to examine the state of the fortifications as well as the nature of the country, and also to observe the conduct of the

Genoese government towards the English and other belligerent powers. These instructions were dated Loano, and signed Ricord. Ricord and the younger Robespierre were then commissioners. Bonaparte went to Genoa and fulfilled his commission. Meantime, the revolution of the 9th and 10th Thermidor (27th and 28th July) took place, Robespierre fell, and his party was proscribed. Albitte, Saliceti, and Laporte, were the new commissioners appointed to the army of Italy. On Bonaparte's return from Genoa to head-quarters, he was placed under arrest, his papers were seized, and an order was issued by the commissioners, stating that he had lost their confidence by his suspicious conduct, and especially by his journey to Genoa; he was suspended from his functions of commander of the artillery, and ordered to proceed to Paris under an escort to appear before the committee of public safety. This order was dated Barcelonnette, 6th August, and signed by the three commissioners, and countersigned by Dumorbron, general-in-chief. Bonaparte remained under arrest for a fortnight. He wrote a pithy remonstrance, which he addressed to Albitte and Saliceti, without taking any notice of the third commissioner Laporte. In it he complains of being disgraced, and having his character injured without trial; he appeals to his known patriotism, his services, his attachment to the principles of the revolution; he appeals to Saliceti, who had known him he says for five years, &c. This remonstrance induced the commissioners to make a more precise investigation of the affair, and the result was a counter order from them, dated Nice, 20th August, stating that citizen Bonaparte had been arrested in consequence of measures of general safety after the death of the traitor Robespierre; but that the commissioners 'having examined his conduct previous to his journey to Genoa, and also the report of that mission, had not found any positive reason to justify the suspicions they might have entertained of his conduct and principles, and that considering moreover the advantage derived from his military information and knowledge of localities to the service of the republic, they, the commissioners, order him to be restored provisionally to liberty, and to remain at head-quarters until further instructions from the committee of public safety.' This curious document serves to show the kind of justice dealt out by the French republic in those times. Bonaparte however seems to have had no further annoyance on the subject. The real grounds of his accusation have never been known, and he himself, at the close of his life, professed himself to be ignorant of them. (Bonaparte's *Memoirs* dictated to Gourgaud and Montholon.)

After the close of the campaign of 1794, Bonaparte repaired to Marseilles, where his family then was. It would seem that he had been superseded in his command of the artillery, for we find him early in the following year at Paris soliciting employment. Aubry, an old officer of artillery, was then president of the military committee. Bonaparte was coldly received by this officer, who made some remarks on his youth, which Bonaparte resented; Aubry then appointed him general of a brigade of infantry, in the army of La Vendée, an appointment which he refused, considering it a sort of degradation. He remained therefore without active employment, retaining his rank of general of brigade. He now took lodgings in the Rue du Mail, near the Place des Victoires, and led a private life. Bourienne states, that he had then some idea of going into the Turkish service, and gives a copy of a project which Bonaparte laid before the war-office, showing the advantages that would result to France by forming a closer connexion with the Porte, and sending officers of artillery with a body of gunners to instruct the troops of the sultan. Meantime, a new crisis arrived in the affairs of France. The Convention had framed a new constitution, establishing a council of elders, a council of juniors, and an executive directory of five members. This is known by the name of the constitution of the year III., and was in fact the third constitution proclaimed since the beginning of the revolution. But the Convention, previously to its own dissolution, passed a resolution to the effect, that at least two-thirds of the members of the two legislative councils should be taken from the members of the actual Convention. This resolution was laid before the primary assemblies of the departments, and every kind of influence, legal and illegal, was used to ensure its approbation. The department of Paris however refused, and the sections or districts of that city being assembled, demanded a strict scrutiny of the returns of the votes of the

assemblies of the departments, and protested against the attempt of the Convention to perpetuate its own power. They declared they would no longer obey the orders of that body. It was said that the sections were urged or encouraged in their resistance by the royalists, who hoped to derive benefit from it. But it is also well known that the Convention, many of whose members were implicated in the bloodshed and atrocities of the reign of terror, was odious to the Parisians. On the other side the members of the Convention for this very reason were afraid of returning to the rank of private citizens. They determined therefore to risk every thing in order to carry their object by force. They had at their disposal about 5000 regular troops in or near Paris, with a considerable quantity of artillery, and a body of volunteers from the suburbs. The command of these forces was given to Barras, a leading member of the Convention, who had mainly contributed to the fall of Robespierre. Barras, who had become acquainted with Bonaparte at the siege of Toulon, proposed to intrust him with the actual direction of the troops for the defence of the Convention. Bonaparte was also known to Carnot and Tallien, and other members of the Convention, as an able artillery officer. The choice being unanimously approved, Bonaparte quickly drew his line of defence round the Tuileries where the Convention was sitting, and along the adjoining quay on the north bank of the Seine. He depended mainly upon his cannon loaded with grape-shot, which he had placed at the head of the various avenues through which the national guards, the force of the citizens, must advance. The national guards had no cannon. They advanced on the morning of the 13th Vendemiaire (4th October, 1795), nearly 30,000 in number, in several columns, along the quays and the street of St. Honoré. As soon as they were within musket-shot, they were ordered to disperse in the name of the Convention; they answered by discharging their firelocks, and their fire was returned by discharges of grape-shot and canister, which did great execution among the thick masses, cooped up in narrow streets. They however returned several times to the charge, and attempted but in vain to carry the guns; the fire of the cannon swept away the foremost, and threw the rest into disorder. Foiled at all points, after two hours' fighting, the national guards withdrew in the evening to their respective districts, where they made a stand in some churches and other buildings; but being followed by the troops of the Convention, their disunited resistance was of no avail; they were obliged to surrender, and were disarmed in the night. By the next morning all Paris was subdued. The Convention and its troops did not use their victory with cruelty; except those who were killed in the fight, few of the citizens were put to death, and only two of the leaders were publicly executed, others being sentenced to transportation. General Berruyer, Verdier, and others, served with Bonaparte on the occasion, but to Bonaparte chiefly the merit of the victory was justly attributed. He was appointed by a decree of the Convention second in command of the army of the interior, Barras retaining the nominal chief command himself; and soon after the new constitution coming into operation, Barras being appointed one of the directors, resigned his military command, and Bonaparte became general of the interior.

About this time, Bonaparte became acquainted with Josephine Beauharnois, a native of Martinique, and the widow of the Viscount Alexandre de Beauharnois. This lady had suffered imprisonment, but was liberated at the fall of Robespierre. The Director Barras, an old acquaintance of her husband, frequented her society, and she was also intimate with Madame Tallien, and other persons of note and influence at that time. She was amiable, elegant, and accomplished. Bonaparte saw her often, and became attached to her. She was several years older than he was. He was now rapidly rising in his fortunes, and his marriage with a lady of rank and fashion (for rank, although nominally proscribed, began again to exercise a sort of influence in society), who was upon terms of intimacy with the political leaders of that period, could not but prove advantageous to him. Such was the advice given to him by his friends, and particularly, it is reported, by Talleyrand. Barras, having heard of the projected marriage, approved of it also. Meantime, Bonaparte had been applying to Carnot, the then minister at war, for active employment. The directors had at that time turned their attention towards Italy, where the French army, under General

Scherer, was making no great progress. After gaining a victory over the Austrians at Loano, in November, 1795, the French were still cooped up in the western Riviera of Genoa, between the mountains and the sea, without being able to penetrate into Piedmont; and this was the fourth year of that war carried on at the foot or in the defiles of the Alps and the Ligurian Apennines. Barras and Carnot agreed to give Bonaparte the command of the army of Italy, and the other directors approved of it. This appointment was signed the 23rd February, 1796; on the 9th of March following he married Josephine, and a few days after parted from his bride to assume the command of the army of Italy. The stories that have been propagated about his marriage being made the condition of his appointment, and all the innuendos built upon that assumption, appear to have no foundation. He was appointed to the army of Italy, because he was thought capable of succeeding, because he was already acquainted with the ground, perhaps also it was thought that his Italian origin might afford him facilities with the people of that country; and lastly, because the directors were not sorry to have a general at the head of one of their armies who was a man of their choice, and seemingly dependent upon their favour, one whose growing reputation might serve as a counterpoise to the widely-extended popularity of Moreau, Pichegru, Hoche, and the other generals of the first years of the Republic.

The army at Bonaparte's disposal consisted of about 50,000 men, of whom only two-thirds were fit for the field. It was in a wretched state as to clothing, and ill supplied with provisions; the pay of the soldiers was in arrears, and the army was almost without horses. The discipline also was very relaxed. The Piedmontese and Austrian combined army was commanded by Beaulieu, a gallant veteran, past seventy years of age: it was posted along the ridge of the Apennines, at the foot of which the French were advancing. Bonaparte, in his despatches to the Directory, stated the allied armies at 75,000 men, and his own effective troops at 35,000. On the 27th of March he arrived at Nice, and immediately moving his headquarters to Albenga, pushed his advanced guard as far as Voltri, near Genoa. Beaulieu, with the Austrians' left, attacked Voltri and drove the French back; he at the same time ordered D'Argenteau, who commanded his centre, to descend by Montenotte upon Savona, and thus take the French in flank. On this road the French Colonel Rampon was posted with 1600 men on the heights of Montelegrino. He was repeatedly attacked on the 10th April by D'Argenteau, but stood firm, and all the assaults of the Austrians could not dislodge him from the redoubt. This gave time to Bonaparte to collect his forces, and to march round in the night by Altare to the rear of D'Argenteau, whom he attacked on every side on the following day, and obliged to make a disorderly retreat beyond Montenotte after losing the best part of his division, before Beaulieu, on the left, or Colli, who commanded the Piedmontese at Ceva on the right, could come to his support. Bonaparte had now pushed into the valley of the Bormida, between the two wings of the allied army. Beaulieu and Colli hastened to repair this disaster, and re-establish their communications by Millesimo and Dego. On the 13th April, Bonaparte sent Augereau to attack Millesimo, which he carried; but the Austrian General Provera, with 2000 men, threw himself into the old castle of Cossaria on the summit of a hill, where he withstood all the assaults of the French for that day. Two French general officers were killed in leading the attack, and another, Joubert, was severely wounded. On the 14th the whole of the two armies were engaged. Colli, after an unsuccessful endeavour to relieve Provera, was driven back towards Ceva, while Massena attacked Beaulieu at Dego, and forced him to retire towards Acqui. Provera, without provisions or water, was obliged to surrender. The Piedmontese were now completely separated from the Austrians, which was the great object of Bonaparte's movements. The French remained for the night at Magliani, near Dego. All at once, early in the morning of the 15th, an Austrian division 5000 strong under General Wukassowich, coming from Voltri by Sassello, and expecting to find their countrymen at Dego, were astonished to find the French there, who were equally surprised at seeing the Austrians, whom they had driven far away in their front, reappear in their rear. Wukassowich did not hesitate; he charged into the village of Magliani, and took it. Massena hurried to the spot

to drive away the Austrians; Laharpe came also with reinforcements, but they could not succeed, until Bonaparte himself came and led a fresh charge, and at last obliged Wukassowich to retire. This was called the battle of Dego, but more properly of Magliani, the last of a series of combats which opened to Bonaparte the road into the plains of North Italy.

Beaulieu retired to the Po with the intention of defending the Milanese territory, leaving Colli and the Piedmontese to their fate. Bonaparte turned against Colli, drove him from Ceva, and afterwards from Mondovì, and beyond Cherasco. Colli withdrew to Carignano, near Turin. The provinces of Piedmont, south of the Po, were now open to the French; the king, Victor Amadeus III., became alarmed, and asked for a truce, which Bonaparte granted on condition that the fortresses of Cuneo and Tortona should be placed in his hands. A peace was afterwards made between the king and the Directory, by which the other Piedmontese fortresses and all the passes of the Alps were given up to the French, and Piedmont in fact was surrendered at discretion. This defection of the king of Sardinia ensured the success of the French army. From his head-quarters at Cherasco Bonaparte issued an order to his soldiers, in which, after justly praising their valour, and recapitulating their successes, he promised to lead them on to further victory, but enjoined them at the same time to desist from the frightful course of plunder and violence which had already marked their progress into Italy.

Being now safe with regard to Piedmont, Bonaparte advanced to encounter Beaulieu, who had posted himself on the left bank of the Po, opposite to Valenza, his troops extending eastwards as far as Pavia. Bonaparte made a feint of crossing the river at Valenza, while he dispatched a body of cavalry along the right bank into the state of Parma, where they met with no enemy, seized some boats near Piacenza, crossed over to the Milanese side, and dispersed some Austrian pickets who were posted there; Bonaparte, quickly following with a chosen body of infantry, crossed the river nearly thirty miles below Pavia. Beaulieu was now obliged to fall back upon the Adda after a sharp engagement at Fombio, on the road from Piacenza to Milan. Milan was evacuated by the Austrians with the exception of the castle. Bonaparte resolved to dislodge Beaulieu from his new position, and accordingly he attacked the bridge of Lodi, on the Adda, which the Austrians defended with a numerous artillery. He carried it by the daring bravery of his grenadiers and the bad dispositions of the Austrian commander, who had not placed his infantry near enough to support his guns. The Austrian army was panic-struck. Beaulieu attempted to defend the line of the Mincio, but he had only time to throw a garrison into Mantua, and then withdraw behind the Adige into the Tyrol. Bonaparte took possession of Milan and of all Lombardy, with the exception of Mantua, which he blockaded. Thus ended the first Italian campaign of 1796.

At the first entrance of the French the people of Lombardy showed a quiet, passive spirit. There was no enthusiasm among them either for or against the invaders; they had enjoyed half a century of peace under the administration of Austria, which under Maria Theresa and Joseph had effected many useful reforms, and acted in an enlightened, liberal spirit. The country was rich and thriving, as it always must be from its natural fertility as long as it enjoys peace and security to property. The Milanese looked upon the French invasion rather with wonder than either satisfaction or hostility. Ideas of a republic existed only in a few speculative heads; but there were many who sided with the French, in order to share their superiority and advantages as conquerors. The people of the towns behaved hospitably to the French troops, who on their side maintained a stricter discipline than they had done in passing through Piedmont. But the army was to be supported, equipped, and paid by the conquered countries; such was the system of the Directory and of Bonaparte. The Directory, besides, wished to receive a share of the golden harvest to recruit its own finances, and its orders were to draw money from all the Italian states. Bonaparte accordingly put upon Lombardy a contribution of twenty millions of francs, which fell chiefly on the rich proprietors and the ecclesiastical bodies. Meantime he authorized the commissaries to seize provisions, stores, horses, and other things required, giving cheques to be paid out of the contributions. This was done in the towns with a certain regularity, but in the country

places, away from the eyes of the general, the commissaries and soldiers often seized whatever they liked without any acknowledgment. The owners who remonstrated were insulted or ill used; and many of the Italians calling themselves republicans assisted the French in the work of plunder, of which they took their share. The horses and carriages of the nobility were seized because it was said they belonged to the aristocrats. All property belonging, or supposed to belong, to the archduke and the late government, was sequestered. But an act which exasperated the Milanese was the violation of the Monte di Piet  di Milan, a place of deposit for plate, jewels, &c., which were either left for security, or as pledges for money lent upon them. The Monte was broken into by orders from Bonaparte and Saliceti, who accompanied the army as commissioner of the Directory. They seized upon this deposit of private property, took away the most valuable objects, and sent them to Genoa to be at the disposal of the Directory. Many of the smaller articles belonged to poor people; many were placed there by the parents of young girls as a dowry when they came to be married. Although these smaller objects were not intended by Bonaparte to be detained, yet in the disorder of the seizure many of them disappeared, and a report spread through Milan that all had been seized. The same thing had been practised at Piacenza when Bonaparte and Saliceti passed through it; and afterwards the plunder, either partial or entire, of the Monte di Piet , became a common practice of the French army in all the towns they entered.

These excesses led to insurrections in different parts of the country, in which French soldiers were killed by the peasantry. The inhabitants of Binasco, a large village between Milan and Pavia, rose and killed a number of the French and their Italian partizans. The country people ran towards Pavia, and were joined by the lower classes of that town, who had been irritated at the hoisting of a tree of liberty in one of their squares, where an equestrian statue of an emperor had been thrown down by the republicans. On the 23rd of May Pavia was in open insurrection. The French soldiers took refuge in the castle; those scattered about the town were seized and ill treated; some were killed, but most had their lives saved by the interference of the municipal magistrates and other respectable people. General Haquin, who happened to pass through on his way to Milan, was attacked by the frantic populace and wounded, but the magistrates, at their own risk, saved his life. In all this tumult the country people were the chief actors, by the acknowledgment of Haquin himself. Bonaparte, alarmed by this movement in his rear, and at the possibility of its spreading, determined to make an example, and 'strike terror into the people,' a sentence which was afterwards frequently carried into effect in the progress of his arms. A strong body of French troops marched on Binasco, killed or dispersed the inhabitants, burned the place, and then marched against Pavia, which being a walled town was capable of making some defence. Bonaparte sent the archbishop of Milan, who, from the balcony of the town-house, addressed the multitude, and exhorted them to lay down their arms and quietly to disperse, explaining to them the futility of their attempts at resistance. The ignorant and deluded people would not listen to his advice; the French soon forced one of the gates, and the cavalry entering the town, cut down all they met in the streets. The country people ran away by the other gates, and left the unfortunate city to the conqueror. Bonaparte then deliberately ordered Pavia to be given up to plunder for twenty-four hours, as if Pavia had been a fortified town taken by storm, and while it was well known that the great majority of the inhabitants had taken no part in the insurrection, and had made no resistance to the French. This order was publicly signified to the inhabitants and the troops, and during the rest of that day, 25th May, and the whole of that night, the soldiers roted in plunder, debauchery, and every sort of violence within the houses of the unfortunate Pavese. Murder however was not added to pillage and rape, and it is recorded that several of the French officers and soldiers spared the honour and property of those who were at their mercy, and screened them at the risk of their lives from their more brutal companions. Next morning (the 26th) at twelve o'clock the pillage ceased, but Pavia for a long time felt the effects of this cruel treatment. It is not true, as has been stated by some, that the municipal magistrates were shot; they were only sent for a time as

hostages to France. Four of the leaders of the insurrection were publicly executed, and about 100 had been killed on the first irruption of the French into the city. The university and the houses of some of the professors, Spallanzani's in particular, were exempted from pillage. General Haquin, who was sent after this to Pavia as governor, endeavoured to heal the wounds of that fatal day.

Bonaparte imposed on the Duke of Parma, who had not yet acknowledged the French Republic, a sort of peace, on condition of his paying to France a million and a half of francs, besides giving provisions and clothes for the army, and twenty of his best paintings to be sent to Paris. The Duke of Modena, alarmed for his own safety, fled to Venice with the greater part of his treasures, leaving a regency at Modena, who sent to Bonaparte to sue for peace. Modena had committed no hostilities against France, but the duke was allied to the house of Austria by the marriage of his daughter with one of the archdukes: he was also considered as a feudatory of the emperor of Germany. He was required to pay six millions of francs in cash, besides two millions more in provisions, cattle, horses, carts, &c., and fifteen of his choice paintings; but as he was not quick enough in paying the whole of the money his duchy was taken from him a few months after. The Directory wanted cash, and Bonaparte says that he sent during his first Italian campaigns fifty millions of francs from Italy to Paris.

The Grand Duke of Tuscany, although brother to the Emperor of Austria, was an independent sovereign; he had long acknowledged the French Republic, and kept an ambassador at Paris; but the Directory ordered Bonaparte to seize Leghorn, and confiscate the property of the English, Austrians, Portuguese, and other enemies of the republic. Bonaparte executed the order, took Leghorn without any opposition, put a garrison in it, seized the English, Portuguese, and other goods in the warehouses, which were sold by auction, and insisted upon the native merchants delivering up all the property in their hands belonging to the enemies of the French republic. The Leghornese merchants, to avoid this odious act, agreed to pay five millions of francs, as a ransom for the whole. The pope's turn came next. That sovereign was really in a state of hostility towards the French republic, which he had never acknowledged, in consequence of the abolition of the Catholic church in France. On the 18th of June the French entered Bologna, whence Bonaparte ordered away the papal authorities, and established a municipal government. He did the same at Ferrara; and at the same time laid heavy contributions on both those provinces. The Monte di Piet  di Bologna shared the same fate as that of Milan, only the deposits or pledges (not exceeding 200 livres each, 8*l*. sterling) were ordered to be returned to the owners. The people of Lugo, a town between Imola and Ravenna, rose against the invaders. Augereau was sent against Lugo: after three hours' fight, in which 1000 of the natives and 200 French soldiers fell, Lugo was taken, given up to plunder, and partly burnt: the women and children were spared. Proclamations were then issued that every town or village that took up arms against the French should be burnt, and that every individual not a regular soldier taken with arms in his hands should be put to death; and yet the French had loudly exclaimed against the Duke of Brunswick for using a similar threat when he entered France in 1792.

The court of Rome was now in great alarm, and Pius VI. sent envoys to Bonaparte to sue for terms. An armistice was signed on the 23rd of June, preparatory to a definitive treaty of peace between the pope and the Directory. The conditions of the armistice were, that the pope should give up the provinces of Ferrara and Bologna, and the citadel of Ancona, should close his ports against the enemies of France, should pay fifteen millions of livres in gold or silver, and six millions in goods, provisions, horses, cattle, &c., besides surrendering a certain number of paintings, statues, vases, and 500 manuscripts, at the choice of the commissaries sent by the Directory. This new species of spoliation, unprecedented in modern history, was brought into a regular system, and carried on in all countries conquered by the French armies until the fall of Napoleon. Some of the scientific and learned men of France, among whom were Monge and Berthollet, went in succession to Parma, Milan, Bologna, Rome, and afterwards to Venice and Naples, to take an inventory of the works of art, from among which they chose the best, and sent them to Paris.

While these things were going on south of the Po, the

court of Vienna was preparing a fresh army for the recovery of Lombardy. Marshal Wurmser, a veteran officer of considerable reputation, was detached with 30,000 men from the Austrian army of the Rhine, and marched into the Tyrol, where he collected the remains of Beaulieu's troops and the Tyrolese levies, forming altogether an army of between 50,000 and 60,000 men. Bonaparte's army was not quite 50,000, of which part was stationed round Mantua to blockade that fortress, which was garrisoned by 8000 Austrians. Towards the end of July, Wurmser, with the main body of his troops, advanced from Trento by the eastern shore of the Lake of Guarda, towards Verona, while another corps under Quosnadovich marched by the western shore to Salò and Brescia, from which places they drove the French away. Bonaparte, after some hesitation, hastily raised the siege of Mantua, leaving his battering train, and collected the best part of his forces to meet Quosnadovich as the weaker of the two generals. He attacked him at Lonato, drove him back into the mountains, and then turned quickly to the right to face Wurmser, who having passed Verona, had entered Mantua, destroyed the French entrenchments, and was now advancing by Castiglione, from whence he had driven away the French under General Valette. This was a critical moment in Bonaparte's career, and it is said he was in doubt whether to fall back on the Po, but was dissuaded by Augereau. On the 3rd of August the French retook Castiglione after an obstinate combat. Wurmser however took up a position near the town, where he was attacked again on the 5th, and completely defeated, with the loss of his cannon and several thousand men. Wurmser withdrew beyond the Mincio, and afterwards up the Adige into the Tyrol, followed by the French, who attacked and defeated an Austrian division at Roveredo on the 4th September, and entered the city of Trento. Wurmser then suddenly crossed the mountains that divide the valley of the Adige from that of the Brenta, and entered Bassano, where he was joined by some reinforcements from Carinthia, intending to march down again towards Verona and Mantua. But Bonaparte followed him quickly by the same road, and attacked and routed him at Bassano. Wurmser had now hardly 16,000 men left, and his artillery being lost, and his retreat cut off, he took the bold resolution to cut his way to Mantua, and shut himself up in that fortress. With a rapidity of movements then unusual in an Austrian army, he avoided the French divisions moving against him from various quarters, surprised the bridge of Legnago, passed the Adige, marched day and night followed by Bonaparte, beat a French division at Cerea, cut down several other bodies who attempted to oppose him, and at last reached Mantua on the 14th September. Thus, in the course of six weeks, a second Austrian army was destroyed in detail. The rapidity of movements of the French divisions, and the intricacy of their manœuvres, can only be appreciated by an attentive examination of the map of the country.

A third general and a third army were sent by Austria into Italy in the autumn of the same year. Marshal Alvinzi, an officer of some reputation, advanced from Carinthia by the way of Belluno with 30,000 men, while General Davidowich, with 20,000, descended from the Tyrol by the valley of the Adige. They were to meet between Peschiera and Verona, and proceed to relieve Wurmser at Mantua. Bonaparte, who was determined to attack Alvinzi before he could form his junction, gave him battle at Le Nove, near Bassano, 6th November; but in spite of all the efforts of Massena and Augereau, he could not break the Austrian line, and next day he retreated by Vicenza to Verona. On the same day Vaubois, whom Bonaparte had opposed to Davidowich, was driven away from Trento and Roveredo with great loss, and obliged to fall back to Rivoli and La Corona. Had Davidowich followed up his success, he might have pushed on to the plains on the right bank of the Adige near Verona, and have placed Bonaparte in a very critical position, with Alvinzi in front, Davidowich on his left flank, and Mantua in his rear. Instead of this, Davidowich stayed ten days at Roveredo. Alvinzi meantime had advanced by Vicenza and Villanova to the heights of Caldiero facing Verona, where he waited for Davidowich's appearance. Bonaparte attempted, on the 12th November, to dislodge Alvinzi from Caldiero, but after considerable loss he was obliged to withdraw his troops again into Verona. He wrote next day a desponding letter to Paris, in which he recapitulates his losses, his best officers killed or wounded, his soldiers exhausted by fatigue, and himself in

danger of being surrounded. He however determined to make a last effort to dislodge Alvinzi by turning his position. With two divisions under Massena and Augereau he marched quietly out of Verona in the night of the 14th, followed the right bank of the Adige, crossed that river at Ronco early next morning, and moved quickly by a cross road leading through a marshy country towards Villanova in the rear of Alvinzi, where the Austrian baggage, stores, &c., were stationed. The Alpoue, a mountain stream, ran between the French and Villanova. The French attempted to pass it by the bridge of Arcole, but found it defended, and this led to the celebrated battle of that name, which lasted three days, and which was unquestionably the hardest fought in all those Italian campaigns. [ARCOLA.] On the 17th Bonaparte succeeded in turning the position of Arcole, when Alvinzi thought it prudent to retire upon Vicenza and Bassano, where the Austrians took up their winter quarters. Bonaparte wrote to Carnot after the action of the third day; 'Never was a field of battle so obstinately contested: our enemies were numerous and determined. I have hardly any general officers left. They were almost all killed, wounded, or prisoners.'

On the same day that Bonaparte obliged Alvinzi to retire from the Adige, Davidowich, rousing himself from his inexcusable inaction, pushed down by Ala on the Adige, drove Vaubois before him, and entered the plains between Peschiera and Verona. But it was now too late: Bonaparte turned against him, and obliged him quickly to retrace his steps to Ala and Roveredo. Thus ended the third campaign of the year 1796.

Bonaparte had now some leisure to turn his attention to the internal affairs of the conquered countries. The Milanese in general remained passive, but the people of Modena and Bologna seemed anxious to constitute themselves into an independent state. Bonaparte himself had not directly encouraged such manifestations, but his subalterns had; and indeed the revolt of Reggio, which was the first Italian city that proclaimed its independence, was begun by a body of Corsican pontoneers, who were passing through on their way to the army. (Count Paradisi, *Lettera à Carnot Botta*.) Bonaparte allowed Modena, Reggio, Bologna, and Ferrara to form themselves into a republic, which was called Cispadana. As for the Milanese, the Directory wrote that it was not yet certain whether they should not be obliged to restore that country to the emperor at the peace. Bonaparte has clearly stated his policy at that time towards the North Italians in a letter to the Directory 28th December, 1796. 'There are in Lombardy (Milanese) three parties: 1st, that which is subservient to France and follows our directions; 2nd, that which aims at liberty and a national government, and that with some degree of impatience; 3rd, the party friendly to Austria and hostile to us. I support the first, restrain the second, and put down the third. As for the states south of the Po (Modena, Bologna, &c.), there are also there three parties: 1st, the friends of the old governments; 2nd, the partizans of a free constitution, though somewhat aristocratical; 3rd, the partizans of pure democracy. I endeavour to put down the first; I support the second because it is the party of the great proprietors and of the clergy, who exercise the greatest influence over the masses of the people, whom it is our interest to win over to us; I restrain the third, which is composed chiefly of young men, of writers, and of people who, as in France and everywhere else, love liberty merely for the sake of revolution.'

The pope found that he could not agree to a peace with the Directory, whose conditions were too hard, and consequently, after paying five millions of livres, he stopped all further remittance. Bonaparte, after disapproving in his dispatches the abruptness of the Directory, and saying that it was impolitic to make too many enemies at once while Austria was still in the field, repaired to Bologna in January, 1797, to threaten the Roman states, when he heard that Alvinzi was preparing to move down again upon the Adige. The Austrian marshal had received reinforcements which raised his army again to 50,000 men. He marched them in several columns, threatening several points at once of the French line on the Adige, and Bonaparte for awhile was perplexed as to where the principal attack would be made. He learnt however through a spy that the main body of Alvinzi was moving down from the Tyrol along the right bank of the Adige upon Rivoli, where Joubert was posted. On the 13th Bonaparte hurried from Verona with

Massena's division to Rivoli, and on the 14th the battle of Rivoli took place. Alvinzi, calculating upon having before him Joubert's corps only, had extended his line with the view of surrounding him. Twice was Rivoli carried by the Austrians, and twice retaken by the French. Massena, and afterwards Rey, with his division, coming to Joubert's assistance, carried the day. Alvinzi's scattered divisions were routed in detail with immense loss. Another Austrian division under General Provera had meantime forced the passage of the Adige near Legnago, and arrived outside of Mantua, when Provera attacked the entrenchments of the besiegers, while Wurmser made a sortie with part of the garrison. Bonaparte hurried with Massena's division from Rivoli, and arrived just in time to prevent the junction of Provera and Wurmser. Provera, attacked on all sides, was obliged to surrender with his division of 5000 men, and Wurmser was driven back into the fortress. Alvinzi, with the remainder of his army, was at the same time driven back to Belluno at the foot of the Noric Alps. Soon after, Wurmser being reduced to extremities for want of provisions, the garrison having exhausted their last supply of horse-flesh, and being much reduced by disease, offered to capitulate. Bonaparte granted him honourable conditions, and behaved to the old marshal with the considerate regard due to his age and his bravery.

During these hard-fought campaigns the condition of the unfortunate inhabitants of North Italy, and especially of the Venetian provinces, where the seat of war lay, was miserable in the extreme: both armies treated them as enemies. The Austrian soldiers, especially in their hurried retreats, when discipline became relaxed, plundered and killed those who resisted: the French plundered, violated the women, and committed murder too. This happened in the villages and scattered habitations; the towns were laid under a more regular system of plunder by the French commissaries, by requisitions of provisions, clothes, horses and carts, and forced contributions of money. At the same time the greater part of these enormous exactions contributed little to the comforts of the soldiers, but went to enrich commissaries, purveyors, contractors, and all the predatory crew that follows an invading army. Bonaparte, although he resorted to the system of forced contributions, was indignant at the prodigal waste of the resources thus extorted from the natives, while his soldiers were in a state of utter destitution. 'Four millions of English goods,' he wrote to the Directory in October and November, 1796, from Milan, 'have been seized at Leghorn, the Duke of Modena has paid two millions more, Ferrara and Bologna have made large payments, and yet the soldiers are without shoes, in want of clothes, the chests without money, the sick in the hospitals sleeping on the ground. . . . The town of Cremona has given 50,000 ells of linen cloth for the hospitals, and the commissaries, agents, &c., have sold it: they sell every thing: one has sold even a chest of bark sent us from Spain; others have sold the mattresses furnished for the hospitals. I am continually arresting some of them and sending them before the military courts, but they bribe the judges; it is a complete fair; every thing is sold. An employé, charged with having levied for his own profit a contribution of 18,000 francs on the town of Salò in the Venetian states, has been condemned only to two months' imprisonment. It is impossible to produce evidence; they all hold together. . . . And he goes on naming the different commissaries, contractors, &c., concluding, with very few exceptions, that 'they are all thieves.' He recommends the Directory to dismiss them and replace them by more honest men, or at least more discreet ones. 'If I had fifteen honest commissaries, you might make a present of 100,000 crowns to each of them and yet save fifteen millions. . . . Had I a month's time to attend to these matters, there is hardly one of these fellows but I could have shot; but I am obliged to set off to-morrow for the army, which is a great matter of rejoicing for the thieves, whom I have just had time to notice by casting my eyes on the accounts.' The system of plunder however went on during the whole of those and the following campaigns until Bonaparte became First Consul, when he found means to repress, in some degree, the odious abuse; still the commissariat continued, even under the empire, to be the worst-administered department of the French armies.

Bonaparte being now secure from the Austrians in the north turned against the pope, who had refused the heavy terms imposed upon him by the Directory. The papal troops,

to the number of about 8000, were posted along the river Senio between Imola and Faenza, but after a short resistance they gave way before the French, who immediately occupied Ancona and the Marches. Bonaparte advanced to Tolentino, where he received deputies from Pius VI., who sued for peace. The conditions dictated were fifteen millions of livres, part in cash, part in diamonds within one month, and as many again within two months, besides horses, cattle, &c., the possession of the town of Ancona till the general peace, and an additional number of paintings, statues, and MSS. On these terms the pope was allowed to remain at Rome a little longer. The Directory wished at first to remove him altogether, but Bonaparte dissuaded them from pushing matters to extremes, considering the spiritual influence which the pope still exercised over the Catholics in France and other countries. Bonaparte manifested in this affair a cool and considerate judgment very different from the revolutionary fanaticism of the times; he felt the importance of religious influence over nations, and he treated the pope's legate, Cardinal Mattei, with a courtesy that astonished the free-thinking soldiers of the republic.

Austria had meantime assembled a new army on the frontiers of Italy, and the command was given to the Archduke Charles, who had acquired a military reputation in the campaigns of the Rhine. But this fourth Austrian army no longer consisted of veteran regiments like those that had fought under Beaulieu, Wurmser, and Alvinzi; it was made up chiefly of recruits joined with the remnants of those troops that had survived the disasters of the former campaigns. Bonaparte, on the contrary, had an army now superior in number to that of the Austrians, flushed with success, and reinforced by a corps of 20,000 men from the Rhine under the command of General Bernadotte.

Bonaparte attacked the archduke on the river Tagliamento, the pass of which he forced; he then pushed on Massena, who forced the pass of La Ponteba in the Noric Alps, which was badly defended by the Austrian General Oeksay. The archduke made a stout resistance at Tarvis, where he fought in person; but was at last obliged to retire, which he did slowly and in an orderly manner, being now intent only on gaining time to receive reinforcements and to defend the road to Vienna. Bonaparte's object was to advance rapidly upon the capital of Austria and to frighten the emperor into a peace. He was not himself very secure concerning his rear, as he could not trust in the neutrality of Venice which he had himself openly violated. He was also informed that an Austrian corps in the Tyrol under General Laudon, after driving back the French opposed to it, had advanced again by the valley of the Adige towards Lombardy. Had this movement been supported by a rising in the Venetian territory, Bonaparte's communications with Italy would have been cut off. He therefore, dissembling his anxiety, wrote to the archduke from Klagenfurth a flattering letter, in which, after calling him the Saviour of Germany, he appealed to his feelings in favour of humanity at large. 'This is the sixth campaign,' he said, 'between our armies. How long shall two brave nations continue to destroy each other? Were you even to conquer, your own Germany would feel all the ravages of war. Cannot we come to an amicable understanding? The French Directory wishes for peace. . . . To this note the archduke returned a civil answer, saying he had no commission for treating of peace, but that he had written to Vienna to inform the emperor of his (Bonaparte's) overtures. Meantime Bonaparte continued to advance towards Vienna and the archduke to retire before him, without any regular engagement between them. It would appear that the archduke's advice was to draw the enemy farther and farther into the interior of the hereditary states, and then make a bold stand under the walls of Vienna, while fresh troops would have time to come from Hungary and from the Rhine, and the whole population would rise in the rear of the French army and place Bonaparte in a desperate situation. But there was a party at the court of Vienna anxious for peace. Bonaparte had now arrived at Iudenburg in Upper Styria, about eight days' march from Vienna. The citizens of that capital, who had not seen an enemy under their walls for more than a century, were greatly alarmed. The cabinet of Vienna resolved for peace, and Generals Bellegarde and Meerfeldt were sent to Bonaparte's head-quarters to arrange the preliminaries. After a suspension of arms was agreed upon on the 7th April, 1797, the negotiations began at the village of Leoben, and the pre-

liminaries of the peace were signed by Bonaparte on the 18th. Of the conditions of this convention some articles only were made known at the time, such as the cession by the emperor of the Austrian Netherlands and of Lombardy. The secret articles were that Austria should have a compensation for the above losses out of the territory of neutral Venice. This is a transaction which has been loudly stigmatized as disgraceful to all parties concerned in it, in spite of the palliation attempted by Bonaparte's advocates, who pretend that the Venetian senate had first violated their neutrality, and that they had organized an insurrection in the rear of the French army while Bonaparte was engaged with the Archduke Charles in Carinthia. This matter will be best investigated in treating of Venice. [VENICE.] Meantime we can only refer our readers to the *Raccolta di documenti inediti che formano la Storia diplomatica della rivoluzione e caduta della Repubblica di Venezia*, 2 vols. 4to. Florence, 1800, which Daru himself quotes in his *Histoire de Venise*. A careful attention to dates is sufficient to refute every attempt to palliate the dishonesty of the French Directory and of Bonaparte in their conduct towards Venice. The correspondence of Bonaparte, published by Panekoucke, serves to confirm this view of the subject. He says that he seized upon the opportunity of the Austrians having entered Peschiera by stratagem, and without the Venetian senate's consent, in order to frighten the senate into submission to his will. 'If your object,' he said to the Directory, 'is to draw five or six millions from Venice, you have now a fair pretence for it. If you have further views respecting Venice, we may protract this subject of complaint until more favourable opportunities.' This was written in June, 1796. He then seized upon the castles of Bergamo, Brescia, Verona, and other fortified places of the Venetian state, he made the country support his army, and meantime he favoured the disaffected against the senate, who at last, assisted by the Lombards and Poles in his army, revolted at Bergamo and Brescia and drove away the Venetian authorities. When the senate armed to put down the insurrection, the French officers stationed on the Venetian territory obstructed its measures, and accused it of arming against the French. They dispersed by force the militia who assembled in obedience to the senate. At last the conduct of the French having driven the people of Verona to desperation, a dreadful insurrection broke out in April, 1797, which ended by Verona being plundered by the French. Bonaparte now insisted upon a total change in the Venetian government, and French troops being surreptitiously introduced into Venice, the Doge and all authorities resigned.

A provisional government was then formed, but meantime Bonaparte bartered away Venice to Austria, and thus settled the account with both aristocrats and democrats. He wrote to the Directory 'that the Venetians were not fit for liberty, and that there were no more than 300 democrats in all Venice.' By the definitive treaty of peace signed at Campoformio near Udine on the 17th October, 1797, the emperor ceded to France the Netherlands and the left bank of the Rhine with the city of Mainz; he acknowledged the independence of the Milanese and Mantuan states under the name of the Cisalpine republic; and he consented that the French republic should have the Ionian Islands and the Venetian possessions in Albania. The French republic on its part consented (such was the word) that the emperor should have Venice and its territory as far as the Adige, with Istria and Dalmatia. The provinces between the Adige and the Adda were to be incorporated with the Cisalpine republic. The emperor was also to have an increase of territory at the expense of the elector of Bavaria, and the Duke of Modena was to have the Brisgau.

All this time the democrats of Venice were still thinking of a republic and independence; they had planted, with great solemnity, the tree of liberty in the square of St. Mark, and the French garrison graced the show. Bernadotte, who knew the conditions of the treaty, forbade a similar pageant at Udine, where he commanded; but another French commander put a heavy contribution on a small town of the Paduan province, because the inhabitants had cut down their tree of liberty. At last the time approached when the French were to evacuate Venice. Bonaparte wrote to Villetard, the French secretary of legation, a young enthusiastic republican, who had been a main instrument of the Venetian revolution, that all the Venetian democrats who chose to emigrate would find a refuge at

Milan, and that the naval and military stores and other objects belonging to the late Venetian government might be sold to make a fund for their support. Villetard communicated this last proposal to the municipal council, but it was at once rejected; 'they had not accepted,' they said, 'a brief authority for the sake of concurring in the spoliation of their country. They had been too confiding, it was true, but they would not prove themselves guilty also; and they gave in their resignation. Villetard, sincere in his principles, wrote a strong letter to Bonaparte, in which he made an affecting picture of the despair of these men, who had trusted in him and now found themselves cruelly deceived. This drew from Bonaparte an answer which has been often quoted for its unfeeling sneering tone. 'I have received your letter, but do not understand its contents. The French republic does not make war for other people. We are under no obligation to sacrifice 40,000 Frenchmen against the interest of France, to please a band of declaimers whom I should more properly qualify as madmen, who have taken a fancy to have a universal republic. I wish these gentlemen would try a winter campaign with me . . . ' And then he went on quibbling on the words of the treaty, that the French republic did not deliver Venice into the hands of Austria; that when the French garrison evacuated the place and before the Austrians came, the citizens might defend themselves if they thought proper, &c. And this after the troops were disbanded, the Slavonians sent home, the cannons and other arms removed, the fleet carried off by the French to Corfu, Istria, and Dalmatia already occupied by the Austrians, and the country drained of all resources. However, Serrurier was ordered by Bonaparte to complete the sacrifice of Venice. Having emptied the arsenal, and the stores of biscuit and salt, having sent to sea the ships of war, sunk those that were not fit for sea, and stripped the famous state barge called Bucintoro of all its ornaments and gold, he departed with the French garrison, and the next day the Austrians entered Venice. The Venetian senator Pesaro came as imperial commissioner to administer the oaths. The Doge Manin while tendering his oath fell into a swoon, and died soon after. Thus ended the republic of Venice, an existence of nearly fourteen centuries. With it the naval power of Italy became extinct, and Italy lost the colonies which she still possessed.

During the several months that the negotiations for the peace lasted, Bonaparte had time to effect other changes in Italy. He began with Genoa. That republic ever since the time of Andrea Doria had been governed by patricians; the patrician order was not exclusive as at Venice, and the families were admitted into it from time to time. A class of democrats secretly encouraged by Saliceti, Faipoult, and other agents of the French Directory, conspired against the senate, and effected an insurrection. The lower classes of the people, however, rose in arms against the democrats and routed them: several Frenchmen were also killed in the affray. Bonaparte immediately wrote threatening letters to demand satisfaction, the arrest of several patricians, the liberty of the prisoners, the disarming of the people, and a change in the constitution of the republic. All this was done; a sum of four millions of livres was paid by the principal nobles to the Directory, the French placed a garrison within Genoa, and a constitution modelled upon that then existing in France, with councils of elders and junior a Directory, &c., was put in operation. The people of the neighbouring valleys, who did not relish these novelties, revolted, but were put down by the French troops: and many of the prisoners were tried by court martial, and shot.

The king of Sardinia, by a treaty with the French Directory, remained for the present in possession of Piedmont. Bonaparte showed a marked favour towards that sovereign; he spoke highly of the Piedmontese troops, and wrote to the Directory that the king of Sardinia with one regiment was stronger than the whole Cisalpine republic. Insurrections broke out in several towns of Piedmont, which Bonaparte however openly discountenanced, professing, at the same time, a deep regard for the House of Savoy. His letters to the Marquis of St. Marsan, minister of the king, were made public, and the insurgents having thus lost all hope of support from him, were easily subdued by the king's troops, and many of them were executed. Thus at one and the same time the democrats of Genoa were encouraged by Bonaparte, those of Piedmont were abandoned to the severity of the king, those of Venice were

given up to Austria, and those of Lombardy were despoiled. Bonaparte wrote to the Directory that he had with him only 1500 Cisalpine soldiers, the refuse of the towns, that no reliance could be placed on the democrats, who were but a handful, and that were it not for the presence of the French they would be all murdered by the people. (Bonaparte's *Correspondence*.) He however thought proper to consolidate the Cisalpine republic, and to give it a constitution after the model of France. The installation of the new authorities took place at Milan on the 9th of July with great solemnity. Bonaparte appointed the members of the legislative committees, of the Directory, the ministers, the magistrates, &c. His choice was generally good; it fell mostly upon men of steady character, attached to order, men of property, men of science, or men who had distinguished themselves in their respective professions. The republic consisted of the Milanese and Mantuan territories, of that part of the Venetian territory situated between the Adda and the Adige, of Modena, Massa, and Carrara, and of the papal provinces of Bologna, Ferrara, Ravenna, Faenza, and Rimini, as far as the Rubicon. Tuscany, Parma, Rome, and Naples remained under their old princes; all, however, with the exception of Naples, in complete subjection to France.

In all these important transactions Bonaparte acted almost as if he were uncontrolled by any authority at home, and often at variance with the suggestions of the French Directory, though he afterwards obtained its sanction to all that he did. He was in fact the umpire of Italy. He at the same time supported the power of the Directory in France by offers of his services and addresses from his army, and he sent to Paris Augereau, who sided with the Directory in the affair of the 18th Fructidor. Bonaparte, however, evinced on several occasions but an indifferent opinion of the Directory, calling it a government of lawyers and rhetoricians, unfit to rule over a great nation. (Bourienne, and Napoleon's *Memoirs* by Gourgand, &c.) He flatly refused, after his first Italian victories, to divide his command with Kellerman; he strongly censured the policy of the Directory with the Italian powers; he signed the preliminaries of Leoben, and withdrew his army from the hereditary states, without waiting for the Directory's ratification. He insisted upon concluding peace with the emperor, and threatened to give in his resignation if not allowed to do so; he made that peace on his own conditions, though some of those were contrary to the wishes expressed by the Directory, and in the end the Directory approved of all he had done. 'It was a peace worthy of Bonaparte. The Italians may perhaps break out into vociferations, but that is of little consequence.' Such were the words of the Directory's minister for foreign affairs, Talleyrand. (Bonaparte's *Correspondence* and Botta, *Storia d'Italia*.)

After the treaty of Campoformio Bonaparte was appointed minister plenipotentiary of the French republic at the congress of Rastadt for the settlement of the questions concerning the German Empire. He now took leave of Italy and of his fine army, who had become enthusiastically attached to him. His personal conduct while in Italy had been marked by frugality, regularity, and temperance. There is no evidence of his having shown himself personally fond of money; he had exacted millions, but it was to satisfy the craving of the Directory, and partly to support his army and to reward his friends.

On his way to Rastadt Bonaparte went through Switzerland, where he showed a haughty, hostile bearing towards Bern, and the other aristocratic republics of that country. He did not stop long at Rastadt, but proceeded to Paris, where he arrived in December, 1797. He was received with the greatest honour by the Directory: splendid public festivals were given to the conqueror of Italy; and writers, poets, and artists vied with each other in celebrating his triumphs. Great as his successes were, flattery contrived to outstrip truth. He however appeared distant and reserved. He was appointed general in chief of the 'Army of England,' but after a rapid inspection of the French coasts and of the troops stationed near them, he returned to Paris. The expedition of Egypt was then secretly contemplated by the Directory. A project concerning that country was found in the archives among the papers of the Duke de Choiseul, minister of Louis XV., and it was revived by the ministers of the Directory. The Directory on their part were not sorry to remove from France a man whose presence in Paris gave them uneasiness, and Bonaparte warmly approved of

a plan which opened to his view the prospect of an independent command, while visions of an Eastern empire floated before his mind. He had in his composition something of that vague enthusiasm of the imagination for remote countries and high-sounding names. At the same time he saw there was nothing at present in France to satisfy his excited ambition, for he does not seem to have thought as yet of the possibility of his attaining supreme power. He was still faithful to the Republic, though he foresaw that its government must undergo further changes.

The expedition having been got ready, partly with the treasures that the French seized at Bern in their invasion of Switzerland in March, 1798, in which Bonaparte took no active part, Bonaparte repaired to Toulon, from whence he sailed on board the admiral's ship *Orient* in the night of the 19th May, while Nelson's blockading fleet had been forced by violent winds to remove from that coast. The destination of the French fleet was kept a profound secret: 30,000 men, chiefly from the army of Italy, composed the land force.

The fleet arrived before Malta on the 9th of June. The Order of St. John of Jerusalem, as it was called, had never acknowledged the French republic, and were therefore considered at war with it. The grand master Hompesch, a weak old man, made no preparations against an attack; yet the fortifications of La Valette were such that they might have baffled the whole power of the French fleet and army, even supposing that Bonaparte could have spared time for the siege. But he was extremely anxious to pursue his way to Egypt, expecting every moment to be overtaken by Nelson and the English fleet, who having received information of his sailing from Toulon were eagerly looking out for him. Every moment was therefore of value to Bonaparte. With his usual boldness, he summoned the Grand Master to surrender on the 11th, and the Grand Master obeyed the summons. It is well known that there were traitors among the knights in high offices, who forced the Grand Master to capitulate. As the French general and his staff passed through the triple line of fortifications, General Caffarelli observed to Bonaparte that 'It was lucky there was some one within to open the massive gates to them, for had the place been altogether empty they would have found it rather difficult to get into it.' After the usual spoliation of the churches, the alberghi, and other establishments of the Order, the gold and silver of which were melted into bars and taken on board the French fleet, Bonaparte left a garrison at Malta under General Vaubois, and embarked on the 19th for Egypt. As the French fleet sailed by the island of Candia it passed near the English fleet, which having been at Alexandria, and hearing nothing of the French there, was sailing back towards Syracuse. Denon says the English were seen by some of the French ships on the 26th, but the French were not seen by Nelson's fleet, owing to the hazy weather. On the 29th of June Bonaparte came in sight of Alexandria, and landed a few miles from that city without any opposition. France was at peace with the Porte, its chargé d'affaires, Ruffin, was at Constantinople, and the Turkish ambassador, Ali Effendi, was at Paris; the Turks of Egypt therefore did not expect the invasion. When they saw the French marching towards Alexandria, the garrison shut the gates and prepared for defence. The town, however, was easily taken; when Bonaparte issued a proclamation to the inhabitants of Egypt, in which he told them that he came as the friend of the Sultan to deliver them from the oppression of the Mamelukes, and that he and his soldiers respected God, the Prophet, and the Koran. On the 7th of July the army moved on towards Cairo. They were much annoyed on the road by parties of Mamelukes and Arabs, who watched for any stragglers that fell out of the ranks, and immediately cut them down, without the French being able to check them, as they had no cavalry. At last, after a harassing march, the French on the 21st arrived in sight of the great pyramids, and saw the whole Mameluke force under Mourad and Ibrahim Beys encamped before them at Embabeh. The Mamelukes formed a splendid cavalry of about 5000 men, besides the Arab auxiliaries; but their infantry, composed chiefly of Fellahs, was contemptible. The Mamelukes had no idea of the resistance of which squares of disciplined infantry are capable. They charged furiously, and for a moment disordered one of the French squares, but succeeded no further, having no guns to support them. The volleys

of musketry and grape shot made fearful havoc among them; and after losing most of their men in desperate attempts to break the French ranks, the remnants of this brilliant cavalry retreated towards Upper Egypt; others crossed the Nile, and retreated towards Syria. This was called the battle of the Pyramids, in which victory was cheaply bought over a barbarian cavalry unacquainted with European tactics. Bonaparte two days after entered Cairo without resistance, and assembled a divan or council of the principal Turks and Arab sheiks, who were to have the civil administration of the country. He professed a determination to administer equal justice and protection to all classes of people, even to the humblest Fellah, a thing unknown in that country for ages. He established an institute of sciences at Cairo; and he endeavoured to conciliate the good will of the Ulemas and of the Imams, and to some extent he succeeded. It is not true however that he or any of his generals, except Menou, made profession of Islamism. The report originated in a desultory conversation he had with some of the sheiks, who hinted at the advantages that might result to him and his army from the adoption of the religion of the country. It was however a wild idea, unsuited both to him and the sort of men he commanded. It would have made him ridiculous in the eyes of his soldiers, and would not probably have conciliated the Moslem natives. While he was engaged in organizing the internal affairs of Egypt, the destruction of his fleet by Nelson took place in the roads of Aboukir on the 1st and 2nd of August. He was now shut out from all communication with Europe. The sultan at the same time issued an indignant manifesto, dated 10th September, declaring war against France for having invaded one of his provinces, and prepared to send an army for the recovery of Egypt. A popular insurrection broke out at Cairo on the 22nd of September; and the French found scattered in the streets were killed. Many however, and especially the women and children, were saved in the houses of the better sort of inhabitants. (Denon's account of that event.) Bonaparte, who was absent, returned quickly with troops; the insurgents were killed in the streets, and the survivors took refuge in the Great Mosque, the doors of which they barricaded. Bonaparte ordered them to be forced with cannon. A dreadful massacre ensued within the mosque, even after all resistance had been abandoned; five thousand Moslems were killed on that day. Bonaparte then issued a proclamation, in which, imitating the Oriental style, he told the Egyptians that he was the man of fate who had been foretold in the Koran, and that any resistance to him was impious as well as unavailing, and that he could call them to account even for their most secret thoughts, as nothing was concealed from him.

In the month of December Bonaparte went to Suez, where he received deputations from several Arab tribes, as well as from the sheik of Mekka, whom he had propitiated by giving protection to the great caravan of the pilgrims proceeding to that sanctuary. From Suez he crossed, at ebb tide, over the head of the gulf to the Arabian coast, where he received a deputation from the monks of Mount Sinai. On his return to Suez he was overtaken by the rising tide, and was in some danger of being drowned. This he told Las Cases at St. Helena.

Meantime the Turks were assembling forces in Syria, and Djexzar Pacha of Acre was appointed seraskier or commander. Bonaparte resolved on an expedition to Syria. In February, 1799, he crossed the desert with 10,000 men, took El Arish and Gaza, and on the 7th March he stormed Jaffa, which was bravely defended by several thousand Turks. A summons had been sent to them, but they cut off the head of the messenger. A great number of the garrison were put to the sword, and the town was given up to plunder, the horrors of which Bonaparte himself in his dispatches to the Directory acknowledges to have been frightful. Fifteen hundred men of the garrison held out in the fort and other buildings, until at last they surrendered as prisoners. They were then mustered, and the natives of Egypt being separated from the Turks and Arnauts, the latter were put under a strong guard, but were supplied with provisions, &c. Two days after, on the 9th, this body of prisoners was marched out of Jaffa in the centre of a square battalion commanded by General Bon. They proceeded to the sand-hills S.E. of Jaffa, and there being divided into small bodies, they were put to death in masses by volleys of musketry. Those who fell

wounded were finished with the bayonet. The bodies were heaped up into the shape of a pyramid, and their bleached bones were still to be seen not many years since. Such was the massacre of Jaffa, which Napoleon at St. Helena pretended to justify by saying that these men had formed part of the garrisons of El Arish and Gaza, upon the surrender of which they had been allowed to return home on condition of not serving against the French;—on arriving at Jaffa however, through which they must pass, their countrymen retained them to strengthen the defence of that place. It may be safely doubted whether the whole of these men were the identical men of El Arish or Gaza. But however this may be, it is true that the Turks did not at that time observe the rules of war among civilized nations, and therefore, it may be said, were liable to be treated with the extreme rigour of warfare. Still it was an act of cruelty, because done in cold blood and two days after their surrender. The motive of the act however was not wanton cruelty, but policy, in thus getting rid of a body of determined men, who would have embarrassed the French as prisoners, or increased the ranks of their enemies if set at liberty. This is the only apology, if apology it be, for the deed. Another and a worse reason was, the old principle of Bonaparte of striking terror into the country which he was invading. But this system, which succeeded pretty well with the North Italians or the Fellahs of Egypt, failed of its effect when applied to the Turks or the Arabs; it only made them more desperate, as the defence of Acre soon after proved. Miot in his Memoirs has, it seems, made a mistake as to the number of the victims, whom he states at two or three thousand; they were about 1200.

At Jaffa the French troops began to feel the first attack of the plague, and their hospitals were established in that town. On the 14th the army marched towards Acre, which they reached on the 17th. Djexzar Pacha, a cruel but resolute old Turk, had prepared himself for a siege. Sir Sidney Smith, with the Tiger and Theseus English ships of the line, after assisting him in repairing the old fortifications of the place, brought his ships close to the town, which projects into the sea, ready to take part in the defence. The Theseus intercepted a French flotilla with heavy cannon and ammunition destined for the siege, and the pieces were immediately mounted on the walls and turned against the French. Colonel Philippeaux, an able officer of engineers, who had been Bonaparte's schoolfellow at Paris, and afterwards emigrated; directed the artillery of Acre. Bonaparte was compelled to batter the walls with only 12-pounders: by the 28th of March however he had effected a breach. The French went to the assault, crossed the ditch, and mounted the breach, but were repulsed by the Turks led on by Djexzar himself. The Turks, joined by English sailors and marines, made several sorties, and partly destroyed the French works and mines. Meantime the mountaineers of Naplous and of the countries east of the Jordan, joined by Turks from Damascus, had assembled a large force near Tiberias for the relief of Acre. Bonaparte, leaving part of his forces to guard the trenches, marched against the Syrians, defeated their undisciplined crowds at Nazareth and near Mount Tabor, and completely dispersed them: the fugitives took the road to Damascus. Bonaparte quickly returned to his camp before Acre, when the arrival of several pieces of heavy ordnance from Jaffa enabled him to carry on his operations with redoubled vigour. The month of April was spent in useless attempts to storm the place. Philippeaux died on the 2nd of May, of illness and over-exertion, but was replaced by Colonel Douglas of the marines, assisted by Sir Sidney Smith and the other officers of the squadron. The French, after repeated assaults, made a lodgment in a large tower which commanded the rest of the fortifications, upon which the Turks and the British sailors, armed with pikes, hastened to dislodge them. At this moment the long-expected Turkish fleet arrived with fresh troops, under the command of Hassan Bey, and the regiment Tchifflik, of the Nizam or regular infantry, was immediately landed. Sir Sidney Smith, without losing time, sent them on a sortie against the French trenches, which the Turks forced, seizing on a battery and spiking the guns. This diversion had the effect of dislodging the French from the tower. After several other attempts Bonaparte ordered an assault on a wide breach which had been effected in the curtain. General Lannes led the column. Djexzar gave orders to let the French come in, and then close upon them man against man, in which sort of combat the Turks were sure to have the ad-

advantage. The foremost of the assailants advanced into the garden of the pacha's palace, where they were all cut down; General Rambaud was killed, and Lannes carried away wounded. On the 20th of May Bonaparte made a last effort, in which General Bon and Colonel Veneux were killed, with most of the storming party. General Caffarelli had died before. The army now began to murmur: seven or eight assaults had been made, the trenches and ditches were filled with the slain, which the fire of the besieged prevented them from burying; and disease, assisted by the heat of the climate, was spreading fast in their camp. After fifty-four days since the opening of the trenches, Bonaparte saw himself under the necessity of raising the siege. The people of Mount Lebanon, the Druses, and Mutualis, who were at one time disposed to join him against Djezzar, seeing his failure before Acre, altered their mind, and sent a deputation on board the Turkish and English fleet. At the same time Bonaparte learnt that the great Turkish armament from Rhodes was about to set sail for Egypt: the Mamelukes had also assembled in considerable numbers in Upper Egypt, and were threatening Cairo. Accordingly he resolved to return to Egypt.

On the 21st of May the French army broke up from before Acre, and began its retreat. In the order of the day which he issued on that occasion, Bonaparte affected to treat with disdain the check he had met with, but he expressed himself very differently to Murat and his other confidants, and we find him, towards the end of his life at St. Helena, reverting to the subject with expressions of disappointment and regret. 'Possessed of Acre, the army would have gone to Damascus and the Euphrates; the Christians of Syria, the Druses, the Armenians, would have joined us. The provinces of the Ottoman Empire which speak Arabic were ready for a change, they were only waiting for a man. . . . With 100,000 men on the banks of the Euphrates, I might have gone to Constantinople or to India; I might have changed the face of the world. I should have founded an empire in the East, and the destinies of France would have run into a different course. (Bonaparte's conversations in Las Cases.) Whatever may be thought of the chances of ultimate success, there is no doubt that Bonaparte, after taking Acre, would have become master of all Syria. But his position, and that of the countries around him, were very different from those of Alexander and the Persians.

The French army retreated through Jaffa, burning every thing behind them, harvest and all. 'The whole country is on fire in our rear,' is Berthier's laconic expression in his report of that campaign. Before continuing their retreat from Jaffa, Bonaparte ordered the hospitals to be cleared, and all those who could be removed to be forwarded to Egypt by sea. There remained about twenty patients, chiefly suffering from the plague, who were in a desperate condition, and could not be removed. To leave them behind would have exposed them to the barbarity of the Turks. Napoleon, some say another officer, asked Desgenettes, the chief physician, whether it would not be an act of humanity to administer opium to them. Desgenettes replied that 'his business was to cure and not to kill.' A rear-guard was then left behind at Jaffa for the protection of these men, which remained there three days after the departure of the army. When the rear-guard left, all the patients were dead except one or two, who fell into the hands of the English, and they, or some other of the sick who were sent by sea and were also taken, having heard something of the suggestion about the opium, propagated the report that the sick had been really poisoned, which was believed both in France and in England for many years after. Such is the result of Las Cases' investigation of this business, both from Napoleon himself and from the chief persons who were at Jaffa at the time.

Bonaparte entered Cairo on the 14th of June. The Syrian campaign lasted little more than three months, and it cost the French about 4000 men, who were killed or died of the plague. The history of that memorable campaign is given in Berthier's official account, as chief of the staff, Sir Sidney Smith's dispatches, and Miot's 'Memoirs': the last appear to be rather exaggerated in some instances, but all agree in giving a sad picture of the condition and sufferings of the French army.

While Bonaparte was in Syria, Desaix had driven the Mamelukes from Upper Egypt, and beyond the cataracts of Assouan. The French had also occupied Cosseir. The division of Desaix contained the French savants, and Denon

among the rest, who examined the monuments of Thebes, Dendera, Etfou, &c. From their observations 'the splendid work on Egypt was afterwards compiled.

Towards the end of July Bonaparte being informed that the Turkish fleet had landed 18,000 men at Aboukir, under Seid Mustapha Pacha, immediately assembled his army to attack them. He had formed a cavalry, which was commanded by Murat; the Turks had none. The Turks had entrenched themselves near the sea, and the French attacked their advanced posts and drove them back upon their entrenchments; but the Turkish guns checked their advance, and threw the foremost of the assailants into disorder. The main body of the Turks then sallied out, but in the eagerness of their pursuit falling into complete disorder they were charged by the French, both infantry and cavalry, routed, and followed into their entrenchments, where they fell into inextricable confusion. About 10,000 of them perished, either by the bayonet or in the sea, where they threw themselves in hopes of regaining their ships. The sea appeared covered with their turbans. Six thousand men received quarter, together with the pacha, whom Bonaparte condescended to praise for the courage he had displayed. This victory of Aboukir, fought on the 25th of July, 1799, closed Bonaparte's Egyptian campaign. It was after this battle that Bonaparte received intelligence of the state of France, through the newspapers, and also by letters from his brothers and other personal friends. He learnt the disasters of the French armies, the loss of Italy, the general dissatisfaction prevailing in France against the Directory, and the intrigues and animosities among the directors themselves, and between them and the legislative councils. He determined at once to return to France. He kept it however a secret from the army, and ordered two frigates in the harbour of Alexandria to be got ready for sea, and having ordered his favourite officers, Murat, Lannes, Berthier, Marmont, and also MM. Monge, Denon, and Berthollet to meet him at Alexandria, he left Cairo on the 18th August, and on arriving at Alexandria embarked secretly on board the frigate La Muiron on the 23rd. He took leave of Kleber, whom he left in command, only by letter. He left in Egypt 20,000 men, having lost about 9000 in his campaigns. The English fleet had gone to Cyprus to get provisions, and Bonaparte was again fortunate enough to avoid the English cruisers. He is said to have read during the passage both the Bible and the Koran with great assiduity. On the 30th September the two frigates entered the gulf of Ajaccio; on the 7th October they sailed again, and passing unnoticed through the English squadron, they anchored on the 9th in the gulf of Frejus, to the eastward of Toulon. The usual forms of quarantine were dispensed with, and on his landing he was received with applause by the inhabitants of the various towns on his road to Paris, and especially at Lyons, which had suffered so much in the Revolution. People were tired of the Directory, which had shown both incapacity and corruption, and to which they attributed all the late misfortunes of France. [BARRAS.] On arriving at Paris Bonaparte found himself courted, as he probably expected, by the various parties. The republicans, with Generals Jourdan, Bernadotte, Augereau, and a majority in the council of 500, wished to restrain the power of the Directory, to turn out Barras, but to maintain the constitution of the year III. Sieyes, one of the directors, with a majority of the Council of Elders, wished for a new constitution, less democratic, of which he had sketched the outline. Barras strove to maintain the power of the Directory, of which till then he had been the most influential member. But his party was small and in bad odour with the people. Bonaparte decided on joining Sieyes, and giving him his military support; the day for attempting the proposed change in the constitution was fixed between them and their friends.

The Council of Elders met at six o'clock in the morning of the 18th Brumaire (9th Oct. 1799) at the Tuileries; but several of the leading members of the republican party were not summoned. Cornudet, Lebrun, and other members in the interest of Sieyes, spoke of dangers which threatened the Republic, of conspiracies of the Jacobins, of a return of the reign of terror, &c. The majority of the council were either in the secret, or were really agitated by fear of the Jacobins. The council adopted a resolution, according to the powers given to it by the constitution, by which the two councils were appointed to meet at St. Cloud the next day, in order to be safer from any attempts of the

mob of the capital. By another resolution General Bonaparte was appointed commander-in-chief of the military division of Paris, and charged with protecting the safe removal of the councils. A message signifying this appointment, and summoning him to appear before the elders, was carried to Bonaparte while he was in the midst of his military levee. He immediately mounted on horseback, and invited all the officers to follow him. The greater number did so; but Bernadotte and a few more declined the invitation. Bonaparte had been talking privately with Bernadotte, but could not win him over to his side; he found him 'as stubborn as a bar of iron.' (Bourienne.) Bonaparte having given his orders to the adjutants of the various battalions of the national guards and to the commanding officers of the regular troops which were formed in the Champs Elysees, repaired to the Council of Elders, surrounded by a numerous retinue, among whom were Moreau, Berthier, Lannes, Murat, and Le Fèvre, who commanded the National Guards. He told the council that they represented the wisdom of the nation, that by their resolutions of that morning they had saved the Republic, that he and his brave companions would support them, and he swore this in his and their names. Coming out of the hall he read to the assembled troops the resolutions of the elders, which were received by the soldiers with bursts of applause.

Meantime the three directors, Barras, Moulins, and Gohier, who remained at the Luxembourg, after Sieyes and Ducos had gone to the Tuileries, and given in their resignation, became alarmed. They had no force at their disposal; even their own personal guard had deserted them. Barras sent his secretary Bottot to endeavour to negotiate with Bonaparte. The general received him in public in the midst of his officers, and assuming the tone of an angry master upbraided the directors with their misconduct:— 'What have you done with that France which I left to you prosperous and glorious? I left her at peace, and I find her at war; I left her triumphant, and I find nothing but spoiliations and misery. What have you done with a hundred thousand Frenchmen whom I left behind, my companions in arms and in glory? They are no more He then signified to Bottot in private his friendly sentiments towards Barras, and assured him of his personal protection if he immediately abdicated. Talleyrand had meantime seen Barras, who, fearing perhaps to expose himself to an investigation of his official conduct, consented to resign. He wrote a letter to the Council of Elders to that effect, and then set off for his estate in the country under an escort which Bonaparte gave him. [BARRAS.] Gohier and Moulins being thus left alone did not constitute the number required by the constitution in order to give to their deliberations the authority of an executive council. Moreau was sent by Bonaparte to guard the palace of the Luxembourg, and in fact to keep the two directors prisoners there.

The Council of Five Hundred having met at 10 o'clock on the same day, received a message from the elders, adjourning the sitting to St. Cloud for the next day. They separated amidst cries of 'The Republic and the Constitution for ever!'

Fouché, the minister of police, Cambaceres, minister of justice, Talleyrand, and other influential men, seconded the views of Bonaparte and of Sieyes. The power of the directory was at an end. The question was, what form of government should be substituted for it. It was agreed at last that the council should adjourn themselves to the following year, after appointing a commission for the purpose of framing a new constitution, and that meantime an executive should be formed consisting of three consuls, Sieyes, Ducos, and Bonaparte. These measures it was known would obtain a majority in the Council of Elders, but would meet with a determined opposition in that of the Five Hundred.

On the 19th Brumaire (10th November) the councils assembled at St. Cloud. The republican minority in the Council of Elders complained loudly of the hasty and irregular convocation of the preceding day. In the midst of the debate Bonaparte appeared at the bar, accompanied by Berthier and his secretary Bourienne, the latter of whom gives an account of the scene. He told the deputies that they were treading upon a volcano, that he and his brethren in arms came to offer their assistance, that his views were disinterested, 'and yet,' he added, 'I am calumniated, I am compared to Cromwell, to Cæsar.' This was uttered in a rambling, broke manner. Linglet, one of the mino-

ry, said to him, 'General, will you swear to the constitution of the year 111?' Bonaparte then became animated. 'The Constitution!' he cried out, 'you violated it on the 18th Fructidor [AUGUST], you violated it on the 22nd Floréal, you violated it on the 30th Prairial. All parties by turns have appealed to the Constitution, and all parties by turns have violated it. As we cannot preserve the Constitution, let us at least preserve liberty and equality.' He then talked of conspiracies, of danger to the Republic, &c. Several members insisted on the General revealing these conspiracies, explaining these dangers. Bonaparte, after some hesitation, named Moulins and Barras, who he said had proposed to him to take the lead in the conspiracy. This increased the vociferations among the members: 'The General must explain himself, every thing must be told before all France.' But he had nothing to reveal. He spoke of a party in the Council of Five Hundred which wanted to re-establish the convention and the reign of terror. His sentences became incoherent, he was confused, but at last he said, 'If any orator, paid by foreigners, attempts to put me out of the pale of the law, let him beware! I shall appeal to my brave companions, whose caps I perceive at the entrance of this hall.' Bourienne and Berthier advised him now to withdraw, and they came out together, when Bonaparte was received with acclamations by the military assembled before the palace.

The Council of Five Hundred had also assembled. Its president, Lucien Bonaparte, read aloud the resignation of Barras, which had been forwarded by the Council of Elders. Some of the leaders then proposed to repeat the oath of fidelity to the Constitution, which was carried by acclamation. 'No dictator, no new Cromwell!' resounded through the hall. Augereau, who was present, went out and told Bonaparte what was passing in the council. 'You have placed yourself in a pretty situation.'—'Augereau,' replied Bonaparte, 'remember Arcole; things appeared still worse there at one time. Keep quiet, and in half an hour you will see.' He then entered the Council of the Five Hundred, accompanied by four grenadiers. The soldiers remained at the entrance, he advanced towards the middle of the hall, uncovered. He was received with loud and indignant vociferations. 'We will have no dictator, no soldiers in the sanctuary of the laws. Let him be outlawed! he is a traitor!' Bonaparte attempted to speak, but his voice was drowned in the general clamour. He was confused, and seemed uncertain what to do. Several members crowded around him: a cry of 'Let us save our General!' was heard coming from the door of the hall, and a party of grenadiers rushed in, placed Bonaparte in the midst of them, and brought him out of the hall. One of the grenadiers had his coat torn by struggling with a deputy; but the story of the daggers drawn against Bonaparte appears to be unfounded. In the confusion of the moment Bonaparte may have fancied it. Lucien, after the departure of his brother, attempted to pacify the council, but the exasperation of the members was too great. A motion was put to outlaw General Bonaparte. Lucien refused to put it to the vote, saying, 'I cannot outlaw my own brother, and he deposited the insignia of president, and left the chair. He then asked to be heard in his brother's defence, but he was not listened to. At this moment, a party of grenadiers sent by Napoleon entered the hall. Lucien put himself in the midst of them, and they marched out. He found the military outside already exasperated at the treatment their general had received. Lucien mounted on horseback, and in a loud voice cried out to them, that factious men, armed with daggers and in the pay of England, had interrupted by violence the deliberations of the Council of Five Hundred, and that he, in his quality of president of that assembly, requested them to employ force against the disturbers. 'I proclaim that the assembly of the Five Hundred is dissolved.' This address of Lucien decided the business. The soldiers felt no more scruples in obeying the orders of the president. Murat entered the hall of the Council, at the head of a detachment of grenadiers with fixed bayonets. He summoned the deputies to disperse, but was answered by loud vociferations, execrations, and shouts of 'The Republic for ever!' The drums were then ordered to beat, and the soldiers to clear the hall. They levelled their muskets, and advanced to the charge. The deputies now fled, many jumped out of the windows, others went out quietly by the door. In a few minutes the hall was entirely cleared. In this affair the military were the instruments, and Lucien

the chief director. It is well here to quote the words of Guizot, who after a lapse of thirty-five years, filled with anxious recollections, has lately returned to the subject in a prospectus to address to General Lamouroux & Alphonse: 'We were convinced that the immense majority of the French would approve our proceedings, but our ardour did not rest in the legal manifestation of the wishes of France, and for this we hesitated. . . . The complaint of so many talents rose for a moment against us, and as it has been already mentioned through weakness, but because he was going to carry a right which he had not then,—the right of dissolving the legislature; we hesitated because we had in view the scaffold and the signs of violence, which would have been ours to had we failed, without having time to use the votes of the nation upon our bold attempt. If Napoleon severed a moment, he soon compressed his heart; we braved the scaffold, and all France gave us a bill of indemnity by raising my brother in the consulate, and afterwards (undoubtedly perhaps) to the empire. (*Discours de Louis Bonaparte, Prince de Lucerne, aux Mémoires de General Lamouroux, London, 1843.*) And in another place he says, that 'the appeal of the councils to the constitution was an impossibility, as that constitution had been already rejected by themselves on the 10th Prairial (1793). On that day the legality of the councils was lost; the inevitability of the Council of Five Hundred would only have remained as long as that assembly kept within the pale of the constitution. Beyond this there is no more legality for any one of the branches of the legislature.' One might go further back than the 10th Prairial, and question the legality of the 10th Vendémiaire, in which Bonaparte had wielded a suspicious part. But to talk of legality in France, since the overthrow of the constitutional monarchy in 1792, would be merely a waste of time.

On the night of the same day (10th Brumaire) the elders assembled again, and agreed that a provisional executive of three councils should be appointed. The initiative measure belonging to the other council, Lucien assembled a small majority, some say only thirty members, out of five hundred, who on that night passed several resolutions, by one of which it was stated that there was no longer a Directory. By another, a list of the more eminent republican members was drawn up, who were desired to have fortified their seats in consequence of their violence and their crimes. By another, three provisional councils were appointed, Sieyès, Bossu, and Bonaparte. At one o'clock in the morning, Bonaparte took the oath before the council. At three o'clock the two councils adjourned for three months, after appointing a commission to revise the constitution.

Every thing was now quiet at St. Cloud, and Bonaparte returned to Paris with Bossu. After quitting the society of his wife, he told Rumorine that he thought he had spoken some nonsense while before the councils. 'I had rather speak to soldiers than to lawyers. These fellows really put me out of countenance, I have not the habit of speaking before large assemblies. But the habit will come to me and stay.' On the evening of the following day, Bonaparte took up his residence in the Luxembourg, the palace of the ex-directory.

The fall of the Directory Government, however irregularly brought about, was certainly not a subject of regret for the great majority of the French people, which had neither reason for it nor any confidence in it. The profligacy and impotency of that government were notorious. [HISTORICAL SKETCHES.]

At the first sitting of the three councils Sieyès having said something about a president, Ducos immediately replied, 'The General takes the chair of honour.' Bonaparte then began to state his views on the various branches of the administration and on the policy to be pursued by the government, and supported them in a firm and authoritative tone: Ducos assented, and from that moment Sieyès possessed that his own influence was at an end: he told his friends that they had given themselves a master, and that Bonaparte could and would manage every thing himself and in his own way. The three councils, in consequence with the commissions appointed by the councils, framed a new constitution, which was called the constitution of the year VIII. The outline, with regard to the legislative power, was taken from a plan of Sieyès. It consisted of three councils, of a senate called conservateur, and composed of eight members appointed for life and enjoying a permanent salary, of a legislative body of 200 members,

one-fifth of whom was to be renewed every year, and of a tribunate of ten members, one-fifth to be renewed every year. The councils, on taking the first or second council (for the other two were appointed by him and acted only as his advisers and assistants, but could not oppose his decisions), proposed the laws, the tribunate discussed them in public and either approved of or rejected them; if it approved, it made a copy accordingly to the legislative body, which voted by ballot on the project of law without discussing it. If the proposed law obtained a majority of votes, the senate registered it, and the councils, in their quality of executive promulgated it. The sittings of the senate were secret; those of the legislative body were public; the tribunate was therefore the only deliberative assembly in the state, but it had not the power of originating laws; it could however denounce the measures of the government by an address to the senate. The members of the tribunate were appointed by the senate out of lists of candidates made out by the electoral colleges. The senate filled its own members from a triple list of candidates,—one prepared by the chief council, and by the tribunate, and one by the legislative body. As for the legislative body, the members were selected by the senate out of lists of candidates furnished by the electoral colleges of the departments. The people therefore had no direct election of their representatives. This was the essential anomaly of Sieyès's plan of a constitution styled republican. With regard to the executive, Sieyès had devised a similar plan, which however was not adopted by the commission. He proposed a chief magistrate called Grand Elector, whose only prerogative was to appoint two senators, one for the war and the other for the military department. The two senators were to be independent of each other as well as of the great elector, who was to enjoy his dignity as a senator with a large salary of several millions of francs. Bonaparte exclaimed against the whole scheme, ridiculed it, and treated it as an absurdity. The majority of the commission gave it up, and resorted to the plan already mentioned of three councils appointed for ten years and re-eligible, the first or chief one having the power of appointing to all public offices, and of proposing all public measures, such as war or peace; he recommended the friends of every description, superintended both the internal and foreign departments of the state, &c. The granting of these vast powers met with some opposition in the commission, but Bonaparte sternly overcame them by declaring that if they attempted to weaken the power of the executive, he would have nothing more to do in the business, that he was already first consul, and hinted that a civil war might be the result of further opposition. The commission accordingly yielded to his views. In fact, most men were tired of revolutions, and they felt the necessity of a strong executive in order to re-establish order and internal security.

Bonaparte being thus appointed, or rather confirmed, in his office of first consul or chief magistrate, had the right of naming the other two; he offered Sieyès one of the places, but Sieyès declined the offer. He accepted the place of senator, with the yearly salary of 25,000 francs, and the domain of Crozon, in the park of Versailles, belonging to the state. Bonaparte appointed Cambacérès and Lebrun second and third consuls. They, together with Sieyès and Ducos—the councils, appointed the majority of the members of the senate, who themselves appointed the remainder. The senate next named the 100 tribunes and the 200 members of the legislative body, and thus the whole legislature was filled up at once under the plan of utopian, as there was no time to wait for the lists of candidates to be named by the departments. (*Constitution of the Year VIII.* in Appendix to Guizot's *Mémoires of Napoleon*.) The constitution was submitted to the acceptance of the people in every commune, and registers were opened for the purpose at the offices of the various local authorities; 3,012,509 voters were registered, out of which number 1382 rejected, and 3,011,097 accepted the new constitution, which was then solemnly proclaimed on the 24th December, 1799. Although the number of favourable voters did not constitute in fact anything like one-half of the French citizens above twenty-two years of age, yet as all had had the option of registering their votes, it was considered that those who did not choose to do so, either did not care about the matter, or tacitly approved of the new form of government. The number of favourable votes on this occasion was much greater than that in favour of the former constitutions of 1792 and of the year VII. Bonaparte did not altogether approve of Sieyès's constitu-

tion, although he had greatly modified it by strengthening the executive to a vast extent. 'Napoleon,' thus he spoke afterwards of himself at St. Helena, 'was convinced that France could only exist as a monarchy: but the French people being more desirous of equality than of liberty, and the very principle of the revolution being established in the equalization of all classes, there was of necessity a complete abolition of the aristocracy. If it was difficult to construct a republic on a solid basis without an aristocracy, the difficulty of establishing a monarchy was much greater. To form a constitution in a country without any kind of aristocracy would be as vain as to attempt to navigate in one element only. The French revolution undertook to solve a problem as difficult as the direction of a balloon. . . . The ideas of Napoleon were fixed, but the aid of time and events were necessary for their realization. The organization of the consulate presented nothing in contradiction to them: it taught unanimity, and that was the first step. This point gained, Napoleon was quite indifferent as to the forms and denominations of the several constituted bodies; he was a stranger to the revolution; it was natural that the will of those men who had followed it through all its phases should prevail in questions as difficult as they were abstract. The wisest plan was to go on from day to day without deviating from one fixed point, the polar star by which Napoleon meant to guide the revolution to the haven he desired.' (*Memoirs of Napoleon*, dictated to Gourgaud, vol. i.) The above sentences furnish a clue to Bonaparte's subsequent policy with regard to the internal administration of France. Towards the end of January, 1800, Bonaparte removed from the palace of the Luxembourg to the Tuileries. Of his public entrance into that royal residence amidst the acclamations of the multitude Madame de Stael has given a striking account.

The finances were left by the Directory in a wretched state: the treasury was empty; forced loans arbitrarily assessed had been till then the chief resource of the government. Gaudin, the new minister appointed by Bonaparte, repealed the odious system, for which he substituted 25 per cent. additional upon all contributions direct or indirect. Confidence being thus restored, the merchants and bankers of Paris supplied a loan of twelve millions, the taxes were paid without difficulty, the sales of national domains were resumed, and money was no longer wanting for the expenses of the state. Cambacères continued to be minister of justice. The tyrannical law of hostages, by which nearly 200,000 Frenchmen were placed out of the pale of the law because they happened to be relatives of emigrants or of Vendéans, and were made answerable for the offences of the latter, was repealed. About 20,000 priests who had been banished or imprisoned were allowed to return, or were set at liberty on taking the oath of fidelity to the established government. All persons arrested on mere suspicion, or for their opinions, were set free. 'Opinions,' said Bonaparte, 'are not amenable to the law; the right of the sovereign extends only to the exaction of obedience to the laws.'

The subordinate situations under government were filled with men from all parties, chosen for their fitness. 'We are creating a new sera,' said Bonaparte; 'of the past we must remember only the good, and forget the evil. Times, habits of business and experience, have formed many able men and modified many characters.' Agreeably to this principle, Fouché was retained as minister of police. Berthier was made minister at war instead of Dubois Crancé, the minister of the Directory, who could give no returns of the different corps, and who answered all questions by saying—'We neither pay, nor victual, nor clothe the army; it subsists and clothes itself by requisitions on the inhabitants.'

The churches which had been closed by the Convention were re-opened, and Christian worship was allowed to be performed all over France. The Sabbath was again recognised as a day of rest, the law of the Decades was repealed, and the computation by weeks resumed. The festival of the 21st January, being the anniversary of the death of Louis XVI., was discontinued. The oath of hatred to royalty was suppressed as useless, now that the republic was firmly established and acknowledged by all, and as being an obstacle to the good understanding between France and the other powers. At the same time the sentence of transportation passed on the 19th Brumaire, on fifty-nine members of the former Council of Five Hundred, was changed into their remaining at a distance from Paris, under the surveillance of the police.

France was still at war with Austria, England, and the Porte. Bonaparte sent Duroc on a mission to Berlin, by which he confirmed Prussia in its neutrality. The Emperor Paul of Russia had withdrawn from the confederation after the battle of Zürich, 25th September, 1799, in which Massena gained a victory over the Russian army. Bonaparte now wrote a letter to the king of England, expressing a wish for peace between the two nations. Lord Grenville, secretary of state for foreign affairs, returned an evasive answer, expressing doubts as to the stability of the present government of France, an uncertainty which would affect the security of the negotiations; 'but disclaiming at the same time any claim to prescribe to France what shall be the form of her government, or in whose hands she shall vest the authority necessary for conducting the affairs of a great and powerful nation. His Majesty looks only to the security of his own dominions and those of his allies, and to the general safety of Europe. Whenever he shall judge that such security can in any manner be attained, His Majesty will eagerly embrace the opportunity to concert with his allies the means of immediate and general pacification. Unhappily no such security hitherto exists; no sufficient evidence of the principles by which the new government of France will be directed, no reasonable grounds by which to judge of its stability.' This correspondence was the subject of animated debates in the British parliament. (*Parliamentary Register for the year 1800.*)

Bonaparte had made the overture in compliance with the general wish for peace, but he says himself that he was not sorry it was rejected, and 'that the answer from London filled him with secret satisfaction, as war was necessary to maintain energy and union in the state, which was ill organized, as well as his own influence over the imaginations of the people.' (Montholon, *Memoirs of Napoleon*, vol. i. note on Pitt's policy.) Bonaparte at the same time succeeded in putting an end to the civil war in La Vendée: he entered into negotiations with the principal Vendean chiefs, offering a complete amnesty for the past, and at the same time he sent troops to La Vendée to put down any further resistance. The royalist party had gained considerable strength; owing to the weak and immoral policy of the Directory, many officers of the republic, both civil and military, had entered into correspondence with it, because, as they confessed to Bonaparte, they preferred anything to anarchy, and the return of the reign of terror. But the temperate and yet firm policy of the first consul effected a great alteration in public opinion. The Vendéans themselves were affected by it. The principal of them, Chatillon, D'Aulichamp, the Abbé Bernier, Bourmont, and others, made their peace with the government by the treaty of Montluçon in January, 1800. Georges capitulated to General Brune, and the Vendean war was at an end.

Bonaparte now turned all his attention to the war against Austria. He gave to Moreau the command of the army of the Rhine, and himself assumed the direction of that of Italy. Massena was shut up in Genoa, and the Austrians under General Melas occupied Piedmont and the Genoese territory as far as the French frontiers. Bonaparte made a demonstration of assembling an army of reserve at Dijon in Burgundy, which was composed of a few thousand men, chiefly conscripts or old invalids. The Austrians, lulled into security, continued their operations against Genoa and towards Nice, while Bonaparte secretly directed a number of regiments from the interior of France to assemble in Switzerland on the banks of the Lake of Geneva. He himself repaired to Lausanne on the 13th of May, and marched with about 36,000 men and forty pieces of cannon, up the Great St. Bernard, which had till then been considered impracticable for the passage of an army, and especially for artillery. The cannons were dismounted, put into hollow trunks of trees, and dragged by the soldiers; the carriages were taken to pieces, and carried on mules. The French army descended to Aosta, turned the fort of Bard, and found itself in the plains of Lombardy, in the rear of Melas' Austrian army, which was south of the Po, and intercepting its communications with the Austrian States. Bonaparte entered Milan on the 2nd of June, without meeting with any opposition, and was there joined by other divisions which had passed by the Simplon and the St. Gothard. He now marched to meet Melas, who had hastily assembled his army near Alessandria. Passing the Po at Piacenza he drove back Melas' advanced guard at Casteggio near Voghera, and took a position on the plain of Marengo, on the right bank of the river B-r-

mida in front of Alessandria. On the 14th of June Melas crossed the Bormida in three columns, and attacked the French. The Austrians carried the village of Marengo, and drove the French back upon that of San Giuliano, which was attacked by a column of 5000 Hungarian grenadiers. At four o'clock in the afternoon the battle seemed lost to the French, who were retiring on all points, and in considerable disorder, when Desaix arriving with a fresh division attacked the advancing column, while the younger Kellerman with a body of heavy horse charged it in flank. The column was broken, and General Zach, the Austrian second in command, and his staff, were taken prisoners. The commander-in-chief, Melas, an old and gallant officer, exhausted with fatigue, and thinking the battle won, had just left the field and returned to Alessandria. The other French divisions now advanced in their turn, a panic spread among the Austrians, who, after fighting hard all day, had thought themselves sure of victory, and they fled in confusion towards the Bormida, many being trampled down by their own cavalry, which partook of the general disorder. The Austrian official report stated their loss in killed, wounded, and prisoners at 9069 men, and 1423 horses. The French stated their own loss at 4000 only, and that of the Austrians at 12,000. But the loss of the French must have been greater. Desaix was shot through the breast in the charge; he fell from his horse, and telling those around him not to say anything to his men, he expired. He and Kellerman turned the fate of the battle. An armistice was concluded on the 16th of June between the two armies, by which Melas was allowed to withdraw his troops to the line of Mantua and the Mincio, the French keeping Lombardy as far as the river Oglio. Melas, on his side, gave up Piedmont and the Genoese territory, with all their fortresses, including Genoa and Alessandria, to the French.

Bonaparte having established provisional governments at Milan, Turin, and Genoa, returned to Paris, where he arrived on the 3rd of July, and was received with the greatest enthusiasm. The battle of Marengo had wonderfully consolidated his power, and increased his influence on the opinion of the French. Negotiations for peace took place between Austria and France; Austria however refused to treat without England, and Bonaparte demanded an armistice by sea as a preliminary to the negotiations with England. Malta and Egypt were then on the point of surrendering to the English, and Bonaparte wished to send reinforcements to those countries during the naval armistice. This was refused by England, and hostilities were resumed by sea and by land. Moreau defeated the Austrians commanded by the Archduke John, in the great battle of Hohenlinden, and advanced towards Vienna. The French in Italy drove the Austrians beyond the Adige and the Brenta. (For all this war of 1800 see *Précis des Evenemens Militaires*, par Mathieu Dumas.)

Austria was now obliged to make a separate peace. The treaty of Lunéville, 9th February, 1801, arranged by the two plenipotentiaries, Count Cobenzel and Joseph Bonaparte, was mainly grounded on that of Campoformio. Austria retained the Venetian territories, but Tuscany was taken away from the Grand Duke Ferdinand, and bestowed upon Louis, son of the Duke of Parma, who had married a princess of Spain. Through the mediation of the Emperor Paul of Russia, with whom Bonaparte was now on very friendly terms, the king of Naples also obtained peace. The new pope, Pius VII., was likewise acknowledged by Bonaparte, and left in full possession of his territories, except the legations which had been annexed to the Cisalpine republic. In the course of the same year negotiations were begun with England, where Mr. Addington had succeeded Mr. Pitt as prime minister. Egypt and Malta having surrendered to the English, the chief obstacles to peace were removed. The preliminaries of peace were signed at Paris on the 10th of October, 1801, and the definitive treaty was signed at Amiens, 27th of March, 1802. The principal conditions were, that Malta should be restored to the Knights of St. John, and the forts be occupied by a Neapolitan garrison. The independence of the Cisalpine, Batavian, Helvetic, and Ligurian republics was guaranteed. Egypt was restored to the sultan, the Cape of Good Hope to Holland, and the French West India Islands to France. England retained the island of Ceylon.

Bonaparte had shown at this period an earnest desire for peace, which France stood greatly in need of. Both royal-

ists and republicans were dissatisfied with his dictatorship. Joseph Arena, a Corsican, and brother of Bartolomeo Arena of the Council of Five Hundred, who had warmly opposed Bonaparte on the 19th Brumaire, Ceracchi and Diana, Italian refugees, and several other violent republicans, formed a conspiracy against Bonaparte's life; but they were discovered and imprisoned. Soon after a fresh conspiracy of the royalists, some say of the royalists and Jacobins united, was near terminating the life of the first consul. As Bonaparte was passing in his carriage through the Rue Nicaise on his way to the Opera, 24th December, 1800, a tremendous explosion of several barrels of gunpowder in a waggon, that was drawn up on one side of the street, destroyed several houses and killed many persons. Bonaparte's carriage had just passed, owing to the furious driving of the coachman, who was half intoxicated, and who made his way through all obstacles that had been purposely placed on the road. The police discovered the conspirators, who were fanatical royalists connected with the Chouans in the west of France. They were tried and executed. At the same time Arena and his republican friends, who had been already found guilty, although, it was said, upon evidence not quite conclusive, were brought out of their confinement and executed. By a Senate Consultum, for such the decrees of the Senate were styled, 130 known leaders of the old Jacobin party, several of whom had participated in the atrocities of the reign of terror, were ordered to be transported beyond the seas. Bonaparte expressed his determination to put down both Jacobins and Bourbonists. A law passed the legislative body empowering the executive to banish from Paris, and even from France, persons who should express opinions inimical to the present government. By another law, which passed the Tribunate by a majority of only eight, and was afterwards sanctioned by the legislative body, special criminal courts were established to try all persons accused of treason against the state. The secret police was now organised with the utmost skill by Fouché, and numerous informers from all classes were taken into its pay. Besides the general police, there was a military police, and another police establishment under Bonaparte himself, in his own household.

In April, 1801, a general amnesty was granted to all emigrants who chose to return to France and take the oath of fidelity to the government within a certain period. From this amnesty about 500 were excepted, including those who had been at the head of armed bodies of royalists, those who belonged to the household of the Bourbon princes, those French officers who had been guilty of treason, and those who had held rank in foreign armies against France. The property of the returned emigrants which had not been sold was restored to them. Another conciliatory measure was the concordat concluded between Joseph Bonaparte and Cardinal Consalvi, which was signed by Pius VII. in September, 1801. The pope made several concessions seldom if ever granted by his predecessors. He suppressed many bishoprics, he sanctioned the sale of church property which had taken place, he superseded all bishops who had refused the oath to the republic, and he agreed that the first consul should appoint the bishops, subject to the approbation of the pontiff, who was to bestow upon them the canonical institution. The bishops, in concert with the government, were to make a new distribution of the parishes of their respective dioceses, and the incumbents appointed by them were to be approved by the civil authorities. The bishops, as well as the incumbents, were to take the oath of fidelity to the government, with the clause of revealing any plots they might hear of against the state. With these conditions it was proclaimed, on the part of the French government, that the Catholic religion was that of the majority of Frenchmen; that its worship should be free, public, and protected by the authorities, but under such regulations as the civil power should think proper to prescribe for the sake of public tranquillity; that its clergy should be provided for by the state; that the cathedrals and parish churches should be restored to them. The total abolition of convents was also confirmed. This concordat was not agreed to by the pope without some scruples, nor without much opposition from several of the theologians and canonists of the court of Rome. (*Compendio Storico di Pio VII.*, Milan, 1824; and also Botta, *Storia d'Italia del 1789 al 1814*.) On Easter Sunday, 1802, the concordat was published at Paris, together with a decree of regulations upon matters of discipline, which were so worded as to make

them appear part of the text of the original concordat. The regulations were that no bull, brief, or decision from Rome should be acknowledged in France without the previous approbation of the government; no nuncio or apostolic commissioner to appear in France, and no council to be held without a similar consent; appeals against abuses of discipline to be laid before the council of state; professors of seminaries to subscribe to the four articles of the Gallican Church of 1682; no priest to be ordained unless he be twenty-five years of age, and have an income of at least 300 francs; and lastly, that the grand vicars of the respective dioceses should exercise the episcopal authority after the demise of the bishop, and until the election of his successor, instead of vicars elected *ad hoc* by the respective chapters, as prescribed by the Council of Trent. This last article grieved most the court of Rome, as it affected the spiritual jurisdiction of the church. The pope made remonstrances, to which Bonaparte turned a deaf ear. Regulations concerning the discipline of the Protestant churches in France were issued at the same time with those concerning the Catholic church. The Protestant ministers were also paid by the state.

On the occasion of the solemn promulgation of the concordat in the cathedral of Notre Dame the Archbishop of Aix officiated, and Bonaparte attended in full state. The old generals of the republic had been invited by Berthier in the morning to attend the levee of the first consul, who took them unawares with him to Notre Dame. Bonaparte said at St. Helena that he never repented having signed the concordat: that it was a great political measure; that it gave him influence over the pope, and through him over a great part of the world, and especially over Italy, and that he might one day have ended by directing the pope's councils altogether. 'Had there been no pope,' he added, 'one ought to have been made for the occasion.' (Gourgaud and Las Cases. See also a copy of the concordat in the appendix to Montholon's *Memoirs*, vol. i.)

Bonaparte established an order of knighthood both for military men and civilians, which he called the Legion of Honour. This measure met with considerable opposition in the tribunate. At the first renewal of one-fifth of the members of that body, the senate contrived to eject the most decided members of the opposition.

In January, 1802, Bonaparte convoked together at Lyons the members of the provisional government of the Cisalpine republic, together with deputations of the bishops, of the courts of justice, of the universities and academies, of the several towns and departments, and the national guards, of the regular army, and of the chambers of commerce. The number of deputies amounted to about 500, out of whom a commission of thirty members was selected, which made a report to the first consul of France on the actual state of the Cisalpine republic. The report stated, that owing to the heterogeneous parts of which that republic was composed, there was a want of confidence among them; that the republic was in a state of infancy, which required for some time to come the tutelary support of France; and it ended by requesting that the first consul would assume the chief direction of its affairs. Bonaparte then repaired to the hall of the deputies, and delivered a speech which was an echo of the report: he agreed with all its conclusions, and confirmed them in more positive language. He told them that 'they should still be protected by the strong arm of the first nation in Europe, and that as he found no one among them who had sufficient claims to the chief magistracy, he was willing to assume the direction of their affairs, with the title of President of the Italian Republic, and to retain it as long as circumstances should require it.' The new constitution of the Italian republic was then proclaimed: three electoral colleges—1. of proprietors; 2. of the learned; 3. of the merchants—represented the nation, and appointed the members of the legislature and the judges of the upper courts. The legislative body of seventy-five members voted without discussion on the projects of law presented to it by the executive. There were two councils, under the names of Consulta of State and Legislative Council, which examined the projects of law proposed by the president, the treaties with foreign states, &c. The principal difference between this constitution and that of France was in the composition of the electoral colleges, they being selected in Italy by classes, and in France by communes and departments, without distinction of classes; and also that in Italy there was no tribunate to discuss the projects

of law proposed by the executive. As to the rest, the election of members to the legislature in both countries was not made by the body of the people: in both, the executive power had the exclusive right of proposing the laws; in both the government was monarchical, under republican names, and tempered by constitutional forms. The president was for ten years, and re-eligible. He appointed to all civil and military offices, transacted all diplomatic affairs, &c. Bonaparte appointed Melzi d'Eril as vice-president to reside at Milan in his absence. This choice was generally approved of. Bonaparte gave also a new constitution to the Ligurian or Genoese republic, similar to that of the Italian republic: he did not assume the chief magistracy himself, but placed a native doge at the head of the state. On the 2nd August, 1802, Bonaparte was proclaimed consul for life by a decree of the senate, which was sanctioned by the votes of the people in the departments to the number of three millions and a half. A few days after, another *Senatus Consultum* appeared, altering the formation of the electoral bodies, reducing the tribunate to fifty members, and paving the way in fact for absolute power. The *Mémoires sur le Consulat*, by Thibaudeau, explain the intrigues that took place at the time.

Switzerland was at this time distracted by civil war. The French troops had evacuated the country after the peace of Amiens, but the spirit of dissension among the different cantons remained. Bonaparte called to Paris deputations from every part of Switzerland, and after listening to their various claims, he told them that he would mediate among them: he rejected the schemes of unity and uniformity, saying, that nature itself had made Switzerland for a federal country; that the old forest cantons, the democracies of the Alps, being the cradle of Helvetic liberty, still formed the chief claim of Switzerland to the sympathies of Europe. 'Destroy those free primitive commonwealths, the monument of five centuries,' he added, 'and you destroy your historical associations, you become a mere common people, liable to be swamped in the whirlpool of European politics.' The new Helvetic federation was formed of nineteen cantons on the principle of equal rights between towns and country, the respective constitutions varying however according to localities. The general Diets of the confederation were re-established. The neutrality of Switzerland was recognized; no foreign troops were to touch its territory; but the Swiss were to maintain a body of 16,000 men in the service of France, as they formerly did under the old monarchy. Bonaparte assumed the title of Mediator of the Helvetic league. He retained however Geneva and the bishoprick of Basle, which had been seized by the Directory, and he separated the Valais, which he afterwards aggregated to France. To the end of his reign Bonaparte respected the boundaries of Switzerland, as settled by the act of mediation; that and little San Marino were the only Republics in Europe whose independence he maintained.

Bonaparte had directed a commission of lawyers of the first eminence under the presidency of Cambacères to frame or digest a code of civil laws for France. He himself frequently attended their meetings, and took great interest in the discussions. The result of their labours was the Civil Code, which has continued ever since to be the law of France. It was styled 'Code civil des Français,' and it was accompanied by a Code de procédure. A Code penal, accompanied likewise by a Code d'instruction criminelle, a commercial code [AZUMI], and a military code, were afterwards compiled and promulgated under Bonaparte's administration. These several codes, which are very different in their respective merits, and are often confusedly designated by the name of Code Napoleon, will form the subject of a separate article. [CODE.] The Civil Code is considered by far the best, and constitutes perhaps the most useful bequest of Bonaparte's reign.

The various branches of public instruction also attracted Bonaparte's attention, though in very unequal proportions. The task of providing elementary education was thrown upon the communes, but the communes being mostly very poor, the establishment of primary schools met with many difficulties, and elementary education remained in a languishing and precarious state during the whole of Napoleon's reign. Several reports delivered by the councillor of state, Fourcroy, to the legislative body under the consulate and the empire, show the wretched state of primary and secondary instruction throughout France. The secondary instruction was chiefly given in private establishments. Fourcroy stated

the number of pupils under ten years of age in the primary and secondary schools at only 75,000, and this in a population of thirty-two millions. Classical and literary instruction was afforded by the Lyceæ to about 4000 pupils, whose expenses were defrayed by the State, besides boarders kept at the charge of their parents. The discipline of these establishments was altogether military. Latin, mathematics, and military manoeuvres were the chief objects of instruction at the Lyceæ. Scientific education was given in the special schools in the chief towns of France, such as the schools of law and of medicine, the college of France, and the polytechnic school at Paris, the military school at Fontainebleau, the school of artillery and engineers at Mainz, that of bridges and highways, or civil engineers, the schools for the mines, &c. Speculative, philosophical, or political studies met with little encouragement under Bonaparte's administration. He sneered at all such studies as ideology, and censured them as an idle and dangerous occupation.

The provincial administration of France was now organized upon one uniform plan, and was made entirely dependent on the central power or executive. Each department had a prefect, who had the chief civil authority; he was generally a stranger to the department, received a large salary, and was removed or dismissed at the will of Bonaparte. The mayors of the towns of 5000 inhabitants and upwards were appointed by Bonaparte; those of the communes under 5000 inhabitants, as well as all the members of the municipal councils, were appointed by the respective prefects. Thus all remains of municipal or communal liberty and popular election were quietly abrogated in France. 'I was a dictator,' says Napoleon, 'called to that office by the force of circumstances. It was necessary that the strings of the government, which extended all over the state, should be in harmony with the key-note which was to influence them. The organization which I had extended all over the empire required to be maintained with a high degree of pressure, and to possess a prodigious force of elasticity, &c.' (Las Cases, vol. iv.) His power in fact was much greater than that of the kings of the old monarchy, as his prefects were not men distinguished by rank and fortune and connexions, as the former governors and lieutenant-generals; they owed their whole power to their immediate commissions; they had no personal influence on opinion, and no force except the impulse they received from the chief of the state.

After the peace with England, Bonaparte sent a fleet and an army under his brother-in-law, General Leclerc, to St. Domingo, to reduce the blacks, who had revolted. A dreadful war ensued, which was marked by atrocities on both sides, and ended in the destruction of the French force, and the total emancipation of the blacks. At the same time he re-established the slavery of the blacks in Guadeloupe and Martinique, and authorized afresh the slave trade. By a treaty with Spain, that country gave up Louisiana to France, which France afterwards sold to the United States for fifteen millions of dollars. By another treaty with Portugal, France acquired Portuguese Guiana. In Italy, France took possession of the duchy of Parma, at the death of the duke Ferdinand, in October, 1802. She likewise took possession of the island of Elba, by an agreement with Naples and Tuscany. The annexation of Piedmont to France next filled up the measure of alarm of the other powers at Bonaparte's encroachments. Since the victory of Marengo, Piedmont had been provisionally occupied by the French, and Bonaparte had given out hopes that he would restore it to the old king, for whom Paul of Russia evinced a personal interest. He was then still at war with England, and he had formed a scheme of an offensive alliance with Russia at the expense of Turkey, with a view to march a combined army to India. The violent death of Paul having put an end to this scheme, he immediately procured a decree of the senate constituting Piedmont into a military division of the French empire, under a council of administration, with General Menou at the head. Still the ultimate fate of Piedmont remained in suspense, as it was understood that the emperor Alexander interested himself for the king of Sardinia. But after the assumption of the presidency of the Italian republic, and the annexation of Parma and Elba, and other stretches of power on the side of Holland and the Rhine, at which Alexander openly expressed his displeasure, Bonaparte having no further reason to humour him, a *Senatus Consultum* appeared in September, 1802, definitively incorporating Piedmont with the

French republic, and dividing it into six departments, Po, Dora, Sesia, Stura, Marengo, and Tanaro. England on her side refused to deliver up Malta, as a Neapolitan garrison would have been a poor security against a sudden visit of the French. Lord Whitworth had a long and stormy conference with Bonaparte at the Tuileries on this subject. The English minister having represented to him that the state of things which the treaty of Amiens had contemplated was completely altered by his enormous accession of power in Italy, Bonaparte peremptorily rejected England's claim to interfere in his arrangements concerning other states; he insisted upon Malta being delivered up to some neutral power; and at the same time did not even disguise his further views upon Egypt. He complained of the attacks of the English press upon him (see Mackintosh on Peltier's trial), talked of conspiracies hatched in England against him, which he assumed that the English government was privy to, although Charles Fox himself, who was in opposition to the English minister of the day, had once during his visit to Paris told him with honest bluntness to drive that nonsense out of his head; he complained that every wind that blew from England was fraught with mischief for him; and at last, after an hour and a half of almost incessant talking, he dismissed the English minister to prepare for the renewal of hostilities. (See the instructions given by Bonaparte in his own handwriting to Talleyrand concerning the manner in which he was to receive Lord Whitworth at the last conference between them, in No. IV. Appendix to Sir W. Scott's *Life of Napoleon*. See also in the *Mémoires sur le Consulat* by Thibaudeau, the real opinion of Bonaparte concerning the peace of Amiens, expressed by him confidentially soon after the ratification:—'It was but a truce; his government stood in need of fresh victories to consolidate itself; it must be either the first government in Europe, or it must fall.') On the 25th of March, 1803, a *Senatus Consultum* placed at the disposal of the first consul 120,000 conscripts. England on her side was making active preparations. On the 18th May England declared war against France, and laid an embargo upon all French vessels in her ports. In retaliation for this, a decree of the 22d May ordered that all the English of whatever condition found on the territory of France should be detained as prisoners of war, under pretence that many of them belonged to the militia. General Mortier was sent to occupy the Electorate of Hanover belonging to the king of Great Britain.

In the following September a decree of the consuls, 'in order,' as it stated, 'to secure the liberty of the press,' forbade any bookseller to publish any work until he had submitted a copy of it to the commission of revision. Journals had already been placed under still greater restrictions.

In February, 1804, the police discovered that a number of emigrants and Vendéans were concealed at Paris; that General Pichegru, who, after his escape from Guiana, had openly espoused the cause of the Bourbons, was with them, and that he had had some interviews with General Moreau, Georges Cadoudal, the Chouan chief, who had once before submitted to the first consul, was likewise lurking about Paris. Pichegru, Moreau, and Georges were arrested. The real purpose of the conspirators has never been clearly known. Georges, it seems, proposed to take away the life of the first consul, but it was not proved that the rest assented to this. (See Bourienne.) It was also reported to Bonaparte that the young Duke of Enghien, son of the Duke of Bourbon, and grandson of the Prince of Condé, who was living at Ettenheim in the grand duchy of Baden, was in correspondence with some of the Paris conspirators, and that he was to enter France as soon as the intended insurrection should break out. Bonaparte, worried with reports of plots and conspiracies against him, gave orders to arrest the duke, although on a neutral territory. On the 14th of March a party of gendarmes from Strasburg crossed the Rhine, entered the Baden territory, surrounded the château of Ettenheim, seized the duke and his attendants, and took him to the citadel of Strasburg. On the morning of the 18th the duke was put into a carriage, and taken under an escort to the castle of Vincennes, near Paris, where he arrived in the evening of the 20th. A military court of seven members was ordered by the first consul to assemble at Vincennes that very night. The members were appointed by General Murat, commandant of Paris. General Hulin was president. The captain rapporteur, D'Autancourt, interrogated the duke, (See copy of the interrogatory

and of the duke's answers in Bourienne's *Memoirs*, vol. v.) The charges laid before the court against the prisoner were: that he had borne arms against the French republic; that he had offered his services to the English government; that he was at the head of a party of emigrants assembled near the frontiers of France, and had treasonable correspondence with the neighbouring departments; and lastly, that he was an accomplice in the conspiracy formed at Paris against the life of the first consul. This last charge the duke indignantly denied, and there is not the least evidence that he was implicated in it, nor that he had corresponded with either Pichegru or Georges. (Bourienne.) He was however found guilty of all the charges. The duke expressed a desire to have an interview with the first consul. This however was overruled by Savary, who was present at the trial, though not one of the members, and who abruptly told the court that it was inexpedient to grant the prisoner's request. The duke was sentenced, by the same court, to death for crimes of espionage, of correspondence with the enemies of the republic, and of attempts against the safety, internal and external, of the state. (*Jugement rendu par la Commission Militaire Spéciale éstante à Vincennes, 30 Ventose, An XII. formée en vertu de l'arrêté du Gouvernement du 29 Ventose, composée d'après la loi du 19 Fructidor, An V. de sept membres, nommés par le Général en Chef Murat, Gouverneur de Paris, à l'effet de juger le nommé Louis Antoine Henri de Bourbon, Duc d'Enghien, né à Chantilly le 2 Août, 1772.*) Savary had orders from Bonaparte to see the sentence carried into execution, which was done that very night, or rather early in the morning of the 21st March. The duke asked for a priest, which was refused; he then knelt down, and prayed for a minute or two, after which he was led down by torch-light to a postern gate, which opened into the castle ditch, where a party of gendarmes was drawn up, and a grave had been dug. It was dawn. Savary from the parapet gave the signal for firing. The duke fell dead, and was immediately buried in the dress he had on, without any funeral ceremony. (Savary's *Memoirs*, and General Hulin's pamphlet in extenuation of his share in the transaction.) It is remarkable that Murat, afterwards king of Naples, when himself under sentence of death, told Captain Stratti, who guarded him, 'I took no part in the tragedy of the Duke of Enghien, and I swear this before that God into whose presence I am soon to appear.' (Colletta, *Storia del Reame di Napoli*.) In fact, Murat, as governor of Paris, merely appointed the members of the court-martial according to the orders he received. It is not true that the duke wrote a letter to Bonaparte which was not delivered to him, as Bonaparte himself seems to have believed. (Las Cases and Bourienne.) The apology which Bonaparte made at St. Helena for this judicial murder, was, that he believed the duke was privy to the conspiracy against his life, and that he was obliged to strike terror among the royalists, and put an end to their plots by showing that he was not a man to be trifled with. An additional motive has been ascribed to him, namely, that of re-assuring the party implicated in the former French revolution against any fears they might have of his ever restoring the Bourbons.

On the 6th April Pichegru was found dead in his prison. About the same time, Captain Wright of the English navy, who, having been employed in landing Pichegru and the other emigrants in Brittany, was afterwards captured by the French, and brought to Paris for the purpose of being examined concerning the conspiracy, was likewise reported to have been found dead. The death of these two men is still involved in mystery. Bonaparte has positively denied any knowledge of Captain Wright's death, and has asserted his belief that Pichegru really strangled himself, as it was reported. Yet, even freely admitting the sincerity of his statements, one may suspect that the agents of his police, screened as they were from all public responsibility, might, in their eagerness to serve their master, or rather themselves, have resorted to foul means to get rid of these men when they could not extract from them confessions that would suit their purpose. Bonaparte has repeatedly complained of the hasty zeal of some of his agents. It is stated by Bourienne that Pichegru's depositions did not inculpate Moreau, whom there was an apparent eagerness to find guilty. Some dark rumours were circulated about Captain Wright having been put to excruciating torture. It is very possible that Bonaparte himself did not know at that time all the secrets of his prison-houses. There is a remarkable passage in

Bourienne, who, when he was French agent at Hamburg, kidnapped a spy, a really bad character, and sent him to Paris, 'where,' he says, 'Fouché no doubt took good care of him.' These are ominous words. See Montholon's *Memoirs*, vol. i., where Napoleon speaks of the arbitrary tyranny which the minister of police and his agents exercised until by his decree on state prisons, 13th March, 1810, he stripped them 'of that terrible power of committing any individual at their own pleasure and keeping him in their own hands, without the tribunals taking any cognizance of the case.' This abuse had existed from the time of the convention.

The trial of Moreau, Georges, and the others, did not take place for several months after Pichegru's death. Meantime a motion was made in the Tribunal, by one Curcé, to bestow upon Napoleon Bonaparte the title of emperor, with the hereditary succession in his family. Carnot alone spoke against the motion, which however was passed by a great majority on the 3rd of May. The resolution of the Tribunal was then carried to the Senate, where it was unanimously agreed to. It was then submitted to the votes of the people in the departments. Above three millions of the registered votes were favourable, and between three and four thousand contrary. It was said that in many places those who did not vote were registered as assentients, and that this was the case at Geneva among others. However, even before the votes were collected, Napoleon assumed the title of emperor at St. Cloud on the 18th of May, 1804. On the 19th he issued a decree appointing eighteen of his first generals marshals of the French empire. Deputations with congratulatory addresses soon began to pour in from the departments, and the clergy followed in the wake. The first decrees of the new sovereign were headed—'Napoleon, by the grace of God, and the constitution of the republic, emperor of the French, &c.; but the name of the republic was soon after dropped altogether.

In the month of June the trial of Moreau, Georges, and the others concerned in the conspiracy, took place before a special court. A decree of the Senate had previously suspended, for two years, the functions of the jury in cases of attempts against the person of Napoleon Bonaparte. Twenty of the accused, with Georges at their head, were condemned to death; Moreau, with four more, to two years' imprisonment; and the rest were acquitted, but the police seized them on coming out of court, and replaced them in prison at the command of the emperor. Riviere, Polignac, and some others who had been condemned to death, were reprieved by Napoleon through the entreaties of his wife and sisters. Georges and some of his more stubborn friends were executed. Moreau had his sentence of imprisonment exchanged for perpetual banishment, and sailed for the United States. The proceedings of the trial, and Moreau's defence, were published in the newspapers of the time.

Napoleon requested the pope to perform the ceremony of his coronation. After consulting with his cardinals, Pius VII. determined to comply with his wish, and came to Paris at the end of November, 1804. The coronation took place in the church of Notre Dame on the 2nd of December. The crown having been blessed by the pope, Napoleon took it himself from the altar and placed it on his head, after which he crowned his wife as empress. The heralds then proclaimed the accession 'of the high and mighty Napoleon I., emperor of the French, &c. &c.'

The Italian republic was soon after transformed into a kingdom. A deputation of the consulta or senate proceeded to Paris in March, 1805, humbly requesting Napoleon to accept the antique iron crown, the crown of Italy, with the condition that the two crowns of France and Italy should remain united only on Napoleon's head, and that he should appoint a separate successor to the Italian kingdom. On the 26th May the ceremony was performed in the cathedral of Milan by the archbishop of that city. Napoleon seized the iron crown of the old Longobard kings and placed it on his brow, saying, 'God has given it to me; woe to him who shall attempt to lay hands on it.' He appointed his stepson, Eugene Beauharnois, his viceroy of the kingdom of Italy. On the 7th June Napoleon opened in person the session of the Italian legislative body. (See his speech on the occasion in *Storia dell'Amministrazione del Regno d'Italia durante il dominio Francese*, under the fictitious name of Duraccini, Lugano, 1823, which is the best book of reference for the history of the administration of Northern Italy under Napoleon.) About the same time the Duke of

Genoa, Durazzo, repaired to Milan with a deputation of senators, and expressed a wish on the part of the Genoese to be united to the French empire. A decree of Napoleon, 9th of June, united Genoa to France. Soon after the republic of Lucca was transformed into a principality, and given to Elisa, Napoleon's sister, and her husband Baciocchi, to be holden as a fief of the French empire. Thus two more Italian republics disappeared; San Marino alone remained.

In the preceding year (1804) Napoleon had assembled a large force on the shores of the British channel, with a flotilla at Boulogne, and had given it the name of 'the army of England.' The invasion of England and the plunder of London were confidently talked of among his soldiers. After his return from Milan he gave a new impulse to the preparations for the projected invasion, and spoke of it publicly as an attempt resolved upon. His real intentions however have been a matter of much doubt and controversy. Bourienne, who was then still near Bonaparte's person, positively states that he did not entertain any serious view of landing in England; that he was fully aware of the difficulty and risk of such an undertaking; that even had he succeeded in landing 100,000 men, which was no easy matter, he might have lost one-half or two-thirds in taking possession of London; and then, had the English nation persevered, he, not having the superiority at sea, could not have obtained reinforcements, &c. Bonaparte, at St. Helena, spoke differently. He said he had taken all his measures; he had dispersed his ships all over the sea; and while the English were sailing after them to different parts of the world, his ships were to return suddenly and at the same time; he would have had seventy or eighty French and Spanish ships in the channel, with which he could have remained master of the narrow seas for two months. Three or four thousand boats and 100,000 men were ready at a signal. The enterprise was popular with the French, and was supported, Napoleon said, by the wishes of a great number of English. One pitched battle after landing, the result of which could not be doubtful, and in four days he would have been in London, as the nature of the country does not admit of a war of manœuvres; his army should have preserved the strictest discipline, he would have presented himself to the English people with the magical words of liberty and equality, and as having come to restore to them their rights and liberties, &c. (Las Cases, vol. i. part ii.) It must be observed that all this declamation applies to his preparations towards the end of 1803 and the beginning of 1804, when he was still first consul and preserved a show of respect for the liberties of the people. To O'Meara he spoke in a rather different strain. He said he would have gone straight to London, and have seized the capital, that he would have had all the mobs for him, all the low, dissipated, and loose characters, all the restless discontented, who abound in great cities, and who are everywhere the same, fond of change, and riot, and revolution. He would have excited the democratic element against the aristocracy, he would have revolutionized England, &c. Whether, with such instruments let loose, he would have preserved the discipline of his army, and prevented the horrors that attended his invasion of Spain and other countries, he did not say. Luckily, perhaps for all parties, the trial was not made. While his army was assembled near Boulogne, a new storm burst on the side of Germany.

Austria had remonstrated against the never-ending encroachment of Napoleon in Italy. The Emperor of Russia and Gustavus, King of Sweden, protested against the violation of the German territory on the occasion of the seizure of the Duke of Enghien; the *Moniteur* answered them by taunts and jibes against the two sovereigns. By the treaty of Luneville the Italian, Batavian, and Ligurian republics were acknowledged as independent states, but Napoleon had now seized the crown of Italy, had annexed Liguria to France, and Holland as well as Hanover were occupied by his troops. Both Russia and Austria complained, but their complaints remained unheeded. A new coalition was formed in the summer of 1805 between England, Russia, Austria, and Sweden. Prussia was urged to join it; she hesitated, increased her armies, but remained neutral, looking forward to the events of the war. Austria, without waiting for the arrival of the Russians, who were assembling on the frontiers of Galicia, marched an army into the electorate of Bavaria; and on the elector refusing to join the coalition, they

entered Munich. General Mack, who had given sufficient proofs of incapacity in the field while commanding the Neapolitans in 1798, was by some strange influence placed at the head of the great Austrian army. The Archduke Charles commanded the Austrian forces on the side of Italy. Napoleon directed his army of England to march quickly to the Rhine: other troops from Holland, Hanover, and the interior of France, were ordered to march to the same quarter. He appointed Massena to command the army in Italy.

On the 23rd September, 1805, Bonaparte went in state to the senate, where he delivered a speech on the occasion of the war. As this is a fair specimen of his peculiar style of oratory, we shall quote some extracts. 'The wishes of the eternal enemies of the continent,' he said, 'are at last fulfilled; war is begun in the middle of Germany. Austria and Russia have joined England, and our generation is plunged again into all the calamities of war. . . . The Austrian army has crossed the Inn; the elector of Bavaria has been driven away from his capital; all my hopes of the preservation of peace have vanished. In this instance the wickedness of the enemies of the continent has fully revealed itself. They feared the manifestation of my deep love for peace; they feared that Austria, at the sight of the precipice they have dug under her feet, might return to sentiments of justice and moderation, and they have hurried her into war. I sigh in thinking of the blood that this will cost Europe, but the French name shall derive a fresh lustre from it. Senators, when, at your request, at the voice of the whole French people, I assumed the imperial crown, I received of you and of all citizens a solemn engagement to preserve it pure and without stain. My people will rush to the standard of its emperor and of his army, which in a few days shall have crossed the frontiers. Magistrates, soldiers, citizens, all are determined to keep our country free from the influence of England, who, if she should prevail, would grant us none but an ignominious peace, the principal conditions of which would be the burning of our fleets, the filling up of our harbours, and the annihilation of our industry. I have fulfilled all the promises which I made to the French people, who in their turn have exceeded all their engagements towards me. In the present crisis, so important to their glory and mine, they will continue to deserve the name of the great people by which I have repeatedly saluted them on the fields of battle.'

It was by constantly throwing all the blame of the war upon the English, by continually representing them as a sort of incarnation of the evil principle ever intent on the ruin of France, that Bonaparte succeeded, in a country where great ignorance prevailed on political subjects, and where the press was sure not to contradict him, to create that spirit of bitter and deep animosity against England which continued to exist long after his death. It is curious to read the *Moniteur* of those times, and to see the barefaced assertions and charges against England with which its columns are filled. (*Recueil de décrets, ordonnances, traités de paix, manifestes, proclamations, discours, &c., de Napoleon Bonaparte et des membres du Gouvernement Français depuis le 18 brumaire an 8 [Novembre, 1799] jusqu'à l'année 1812 inclusivement, extraits du Moniteur*, 4 vols. 8vo. 1813, a very useful book of reference.) In one instance the English were gravely accused of having thrown bales of infected cotton on the coast of France in 1804, in order to introduce the plague into that country; and the *Moniteur* (the official journal) added, 'the English cannot conquer us by the sword, they assail us with the plague;' and strange to say, this absurd story has been revived in the 'Memoirs of Marshal Ney,' published at Paris in 1832.

Napoleon repaired to Mainz, where he took the command of the grand army, a name which was afterwards always applied to the army while he commanded in person. He also began in this campaign to issue regular bulletins of the events of the war. Coloured as these documents generally are (Bourienne, in his account of the Egyptian war, shows the process by which Napoleon used to frame them), they constitute however a series of important historical papers.

We cannot enter into the details of the campaign of 1805, and we must refer our readers to the professional statements of military men of both sides who were in it, such as Stutterheim's *Campaign of Austerlitz*; Rapp's *Memoirs*, &c. Suffice it to say that General Mack allowed himself to be surrounded at Ulm, and then surrendered, on the 17th

of October, without fighting, with more than 20,000 men, all his staff, artillery, &c. The other Austrian divisions being now scattered about could make no effectual resistance, and the French entered Vienna on the 19th of Nov. The Russian army had by this time assembled in Moravia, under the Emperor Alexander in person. Being joined by some Austrian divisions it amounted to about 80,000 men. Napoleon told his soldiers that they were now going to meet a new enemy, 'who had been brought from the ends of the world by the gold of England.' Alluding to the high character borne by the Russian infantry, he added:—'This contest is of much importance to the honour of the French infantry. The question must be now finally settled whether the French infantry be the first or the second in Europe.' The great battle of Austerlitz was fought on the 2nd of December, 1805. The two armies were nearly equal in number. The Russians, confident of success, extended their line too much. Bonaparte broke through it and separated their divisions, which, after a stout resistance, especially on the part of the Russian Guards, were routed in detail. The loss of the allies was tremendous; thousands were drowned in the frozen lakes in the rear of their position. The emperor of Austria had an interview with Napoleon the day after, and an armistice was concluded, by which the remaining Russian troops were allowed to retire to their own country. Peace between Austria and France was signed at Presburg on the 26th of December. Austria gave up the Venetian provinces and Dalmatia to the kingdom of Italy, Tyrol to the elector of Bavaria, and other districts, besides a contribution of one hundred millions of francs. This war, which was to have checked the preponderance of Napoleon in Italy, left that country entirely at his disposal, and established his influence over a great part of Germany, where, having raised the electors of Bavaria and Würtemberg to the rank of kings, he placed himself at the head of all the smaller states, which he formed into the confederation of the Rhine under his protection. The old German empire was thus dissolved. Soon after, the Emperor Francis formally renounced his title of emperor of Germany, and assumed the title of Francis I., emperor of Austria and of his other hereditary states.

It must be observed that the position of Napoleon after the battle of Austerlitz in the heart of Moravia, the winter having set in, and he far from the frontiers of France and from his reinforcements and supplies, the Russians, who were expecting reinforcements, in his front, Prussia wavering on his flank, Bohemia untouched, the Archduke Charles and the Hungarian insurrection in his rear, was extremely critical, had he chosen to protract the war. This of course induced him to grant Austria better terms than what she appeared to have a right to, on a mere superficial view of the condition of the two powers. The Austrian empire was not overthrown because Vienna was in the power of the invader. But Napoleon calculated on the habits and the fears of the Emperor Francis, and on his affection for the good citizens of Vienna; and he was not mistaken on this occasion.

The king of Naples, breaking his recent treaty with France, had allowed a Russian and English army to land in his dominions, where they remained useless during the great struggle that was going forward in Germany. Napoleon sent an army to Naples in February, 1806; and King Ferdinand took refuge in Sicily. A decree of Napoleon, March, 1806, appointed his brother Joseph king of Naples and of Sicily. On the 6th of June following he appointed by another decree his brother Louis king of Holland, thus transforming by a stroke of the pen the Batavian republic into a kingdom dependent on France. His brother-in-law, Murat, was made grand duke of Berg. [Berg.]

During his victorious progress in Germany, Napoleon received the news of the total destruction of the French and Spanish fleets by Nelson at the battle of Trafalgar, on the 21st of October, 1805. His peevish remark on the occasion is said to have been—'I cannot be everywhere;' and he threw all the blame on his unfortunate admiral, Villeneuve, who soon after killed himself. From this time Napoleon renounced his plans of invading England, and he applied himself to destroy all English trade and correspondence with the Continent. Charles Fox, who had succeeded Pitt as minister, was known to be favourable to peace. Negotiations accordingly were entered into by Napoleon, on the basis of the *uti possidetis*. Lord Yarmouth, and afterwards Lord Lauderdale, were the English negotiators. Napoleon

however required that Sicily should be given up to Joseph Bonaparte. But Sicily had never been conquered by the French, it had been throughout the war the ally of England, and, owing to that alliance, its sovereign had lost his continental dominions of Naples. To have bartered away Sicily to France would have been, on the part of England, an act of bad faith equal to if not worse than the former barter of Venice by the French. The English minister refused, and, Fox dying soon after, the negotiations broke off.

The conduct of Prussia had been one of tergiversation. Napoleon knew that she had felt the wish, without having the resolution, to strike a blow while he was engaged in Moravia against the Russians. To keep her in good humour he had given Hanover up to her, which Prussia, though at peace with the king of England, scrupled not to accept. She moreover shut her ports against British vessels. Bonaparte, after having settled his affairs with Austria, altered his tone towards Prussia. The *Moniteur* began to talk of Prussia as a secondary power, which assumed a tone that its extent and position did not warrant. In his negotiations with Lord Lauderdale Napoleon had offered to restore Hanover to the king of England. The confederation of the Rhine extended round a great part of the Prussian frontiers. The Prussian minister at Paris, Von Knobelsdorf, in a note which he delivered to Talleyrand on the 1st of October, 1806, said truly, 'that the king his master saw around his territories none but French soldiers or vassals of France, ready to march at her beck.' The note demanded that the French troops should evacuate the territory of Germany. Napoleon answered in a tone of sneer and defiance, saying that 'to provoke the enmity of France was as senseless a course as to pretend to withstand the waves of the ocean.' The king of Prussia issued a long manifesto from his headquarters at Erfurt on the 9th of October, 1806, in which he recapitulated the long series of Napoleon's encroachments, which all the world was acquainted with, but which the king of Prussia seemed now to discover for the first time. Napoleon was speedily in the field; he attacked the Prussians first, and this time he had on his side a large superiority of numbers, added to his superiority of tactics. The double battle of Auerstadt and Jena (16th of October) decided the campaign. The Prussian troops fought bravely, but their generals committed the same error as the Austrian generals had committed before, of extending too much their line of operations. The consequences of the Prussian defeat were most disastrous. Most of their divisions were surrounded and obliged to lay down their arms. Almost all their strong fortresses, Magdeburg, Spandau, Kustrin, Stettin, Hameln, surrendered without firing a shot. The work of the great Frederic's whole life crumbled to pieces in a few weeks. Bliicher and Lestocq were the only officers who kept some regiments together, with which they made a gallant stand in the northern provinces.

Bonaparte entered Berlin on the 21st of October. He dispatched Mortier to occupy Hamburg, and seize all English property there. On the 21st of November, 1806, Napoleon issued his well-known Berlin decree against British commerce. 'The British islands were to be considered as in a state of blockade by all the Continent. All correspondence or trade with England was forbidden under most severe penalties. All articles of English manufacture or produce of the British colonies were considered as contraband. Property of every kind belonging to British subjects, wherever found, was declared lawful prize. All letters to and from England to be detained and opened at the post-offices.' The English government retaliated by its orders in council, 11th November, 1807.

Meantime the king of Prussia had fled to Königsberg, and the Russian armies advanced to the Vistula: the French occupied Warsaw. French agents had previously penetrated into Russian Poland, and had spread a report that Kosciusko was at Napoleon's head-quarters. Napoleon had invited Kosciusko, who was then living in Switzerland, to come, but that single-minded patriot, mistrusting the views of the conqueror, declined the invitation. (*Mémoires de Michel Oginski sur la Pologne et les Polonais depuis 1788 jusqu'en 1815.*)

Napoleon received at his head-quarters at Posen numerous addresses from various parts of Poland, entreating him to restore that country to its independence. His answers were cold and cautious. He began his winter campaign against the Russians by the battle of Pultusk

(1805 of Dec.) in which the French experiencing a severe check retired towards the Vistula. The month of January, 1807, passed without any engagements, but on the 26th of February the great battle of Eylau was fought between the two grand armies. General Bennigsen commanded the Russians. The French made repeated and furious attacks on the Russian battery, which stood like walls of brass, and the combaters were at last obliged to desist. The battle lasted till near ten o'clock at night. The loss on both sides was dreadful: it has never been correctly ascertained, but has been roughly estimated at 30,000 men. After the battle Napoleon withdrew again in the line of the Vistula, and Bennigsen retired towards Koenigsberg. There was no more fighting between the two armies for more than three months after. The French meantime conquered Danzig, which was defended by the Prussian General Kestner, not surrendered at the end of May, 1807. Napoleon having now reinforced his army to 200,000 men, advanced upon towards the Russians. On the 10th of June the state of Prussia took place, in which, after an obstinate struggle, the Russians were at last overpowered, and driven beyond the River Aller. They did not lose, however, either cannon or baggage, and they effected their retreat upon their rear the Russian frontiers. (See Robert Wilson's *Sketch of the Campaigns in Poland in 1806-7*; and *Ueber die Schlacht bey Eylau Napoleon gegen Preussen und Russland in 1807*, Leipzig, 1809.)

As Hanover and Alexander both wished for peace, an armistice was made, and a personal interview took place between the two emperors on a raft in the middle of the sea Neva on the 23d of June. The two sovereigns after this came up their residence in the town of Tilsit, where the treaty of peace was finally signed. The king of Prussia was restored to about one half of his former territories, as far as the Elbe. The duchy of Warsaw was given to the duke of Saxony, who was made a king, and became the central ally of Napoleon. The principal Prussian fortresses and sea-port towns were to remain in the hands of the French till the general peace. Russia made no sacrifice; on the contrary she obtained a part of Prussian Poland, but there were several articles in the treaty, by which France obliged Russia to take Prussia from Sweden, and Russia, on her part, promised to close her ports against British vessels. On the 9th of July Napoleon left Tilsit in return to Paris, where he received the usual tribute of servile addresses and fulsome flattery. (See questions of these addresses in the *Moniteur*.)

On the 19th August a senatus Consultum expressed the Tribunal, the only remains of a national deliberative body in France. It had been previously reduced to one-half of its original number. 'The Tribunal,' said Napoleon to St. Helena, 'was absolutely useless, while it could only half a nation; I therefore suppressed it. I was well aware that an outcry would be raised against this violation of the law; but I was strong; I possessed the full confidence of the people, and I considered myself a reformer. I did every thing for the best. Had I been hypocritical I should have maintained the Tribunal, for who can doubt that it would have adopted and executed, when required, my views and intentions?' And speaking of the alleged severity of the Senate, he informs us that 'in almost every important measure many of the senators, before they gave their vote, came to communicate with him privately, and stated, sometimes very decidedly, their objections; but that they were every convinced either by his arguments, or by the necessity and urgency of affairs.' (See *Coetz*, vol. 1.) Usually and the urgency of circumstances were mighty such with Napoleon; they generally concluded all his arguments on matters of morality and politics. Whether these urgent circumstances were not often of his own creating or seeking is a point which he seems not to have stopped to examine. Three committees of administration, of legislation, and of finance, taken from the legislative body, discussed the projects of law in lieu of the Tribunal.

Having suppressed the Russian of House Counsel in the autumn under the plea that he had not joined him in the war against Russia, as well as the duke of Brunswick of his own ground that the duke had joined Prussia against him, Napoleon treated out of those and other districts the kingdom of Westphalia, 10th August, and gave it to his brother Jerome, who took up his residence at Cassel. Some after, the Prussian Regent of Portugal having refused to enforce the *Non-Intercourse* against England, Napoleon sent Junot

with 50,000 men across Spain to take possession of Portugal. At the same time he published in the *Moniteur* that the House of Braganza had ceased to reign in Europe. Junot entered Lisbon without opposition, November 20th, 1807, the Prince Regent and his court having just before embarked for Brazil. In December of the same year, Napoleon having gone to Milan, sent for the queen of Eliza and her son, and signified to her that she must resign Tuscany, which was immediately occupied by French troops; and in the following June (1808) Tuscany was formally annexed, not to the kingdom of Italy, but to the French empire, of which it formed three new departments. The queen was promised a compensation in Portugal, which she never obtained. On the 17th December, 1807, Napoleon issued from Milan a decree by which all merchant vessels which should submit to the British orders in general were declared to be lawful prizes by the French. In the following year (1808) a number of American vessels were seized and confiscated in the French and Italian ports. The pope was next to Napoleon's displeasure. The French troops had for some time occupied Ancona and Civita Vecchia, in order to keep away the English and the Russians; but Napoleon now insisted on the pope declaring war against England. The pope answered that he was a sovereign of peace, and could not declare war against any Christian power. Napoleon said that as the successor of Charlemagne he was emperor of the west, king of Italy, and Governor of the Pope; that the English were heretics, and therefore enemies of the holy see, and that the division of Charlemagne had been made to defend the holy church against its enemies; that if the pope did not comply with his wishes, he, Napoleon, would take back Charlemagne's gown. We cannot go further here into the long and vainly ostentatious and indolent between Napoleon and the court of Rome, which were carried on for several years, and which form an interesting episode in the general history of those times. (*Compendio Storico di Pio VII.*, Milano, 1804, Botta, *Storia d'Italia*, *Viaggi Annali d'Italia*, and *Memorie Storiche del Cardinal Fieschi*.) By a decree on the 2nd April, 1809, Napoleon annexed the Marches or Adriatic provinces of the Roman state to his kingdom of Italy. There were other points of dispute between the pope and Napoleon on matters concerning the Concordat with the kingdom of Italy. (See a mild well-written letter of the Secretary, Eugene Buchernot, to Pius VII. on the subject in the already quoted work, *Immacolatazione del Regno d'Italia*.) About the same time (February, 1808) a French force under General Miolla entered Rome, occupied the Castle St. Angelo, and began to do military duty in that city. The general took the papal troops under his own command. The pope remained in his palace with the mere shadow of a civil power, which he had no means to enforce.

We now come in another and most important transaction of Napoleon's reign, the invasion of Spain. Spain was the humble and submissive ally of Napoleon; her navy, her army, her treasures were at his disposal. She was at war with Great Britain; she had allowed a free passage to the French troops through her territory in Portugal. Other French divisions had entered Spain as friends in the beginning of 1808, and seized by stratagem the fortresses of St. Sebastian, Pamplona, and Barcelona. At the same time the internal administration of Spain was carried on in a most corrupt and profligate manner. Charles IV., his queen, and the favourite Godoy, had completely disgusted the Spaniards. An insurrectional movement took place at Aranjuez 20th March, and Ferdinand, the heir to the crown, who was a favourite with the people, was proclaimed king, and Charles was induced to abdicate. Napoleon hurried upon this a pretence for interfering. He invited father, mother, son, and favourite to Bayona, where he himself repaired in April. Charles and his queen went readily; Ferdinand hesitated, but Napoleon sent Bayona, who with many assurances of his master's honourable and friendly intentions towards him, gradually desisted the weak prince from stage to stage until he was fairly out of the Spanish territory. A scene of duplicity and dishonesty, of indecent and unnatural coarctations now took place between Napoleon, the old king, the queen, and her son, which for moral turpitude has no parallel in history. (See *Poder Real*, and the *Consejo Real* records.) Charles resumed his character of king, stigmatized Ferdinand as a rebellious son, the queen joined in reviling and disgracing him, at the expense of her own and her husband's honour,

and Ferdinand, overwhelmed by insults and threats, renounced his claim to the crown of Spain on the 6th May. (Concerning the real sentiments of Ferdinand expressed in his intercepted letters, see Bausset, *Mémoires anecdotiques sur l'intérieur du Palais*.) Charles likewise resigned all his rights 'in favour of his friend and ally the emperor of the French.' Napoleon now issued a decree, appointing 'his dearly-beloved brother Joseph Napoleon, king of Naples and Sicily, to the crowns of Spain and the Indies.' By a subsequent decree, 15th July, he appointed 'his dearly-beloved cousin, Joachim Murat, grand duke of Berg, to the throne of Naples and Sicily, which remained vacant by the accession of Joseph Napoleon to the kingdoms of Spain and the Indies.' Both these curious documents are signed Napoleon, and countersigned by the minister secretary of state, Maret.

The memorable events which resulted from these nefarious transactions, the occupation of Madrid by Murat, the revolt and subsequent massacre of the people of that city on the 2nd of May, the insurrection which broke out simultaneously in all parts of the Peninsula against the invaders,—the heroic though often unfortunate resistance of the Spaniards,—the atrocities committed by the French troops, and the cruel retaliations by the Spanish guerrillas,—the long, murderous war of seven years, from 1808 till 1814, in which the British army acted a conspicuous part,—all these may be read in the numerous works written expressly on the subject of the Peninsular war. For the military transactions see Colonel Napier, General Foy, and Major Vacani, and the *Annals of the Peninsular Campaigns*, by Captain Hamilton. For the Spanish view of the subject, see Count Toreno, *Historia del Levantamiento, Guerra, y Revolucion de España*, Madrid, 1835; and Canga Arguelles, *Observaciones sobre las Historias de Southey, Londonderry, Clarke, y Napier*. For a general, historical, and political view of Spain during that period, see Southey's *History of the Peninsular War*. But the work that gives perhaps the best insight into the feelings and conduct of the Spaniards in the various provinces throughout that memorable struggle is the *Histoire de la Révolution d'Espagne*, by Colonel Schepeler, a Prussian officer, who was himself in the Spanish service during the whole time.

During the seven years of the Peninsular war 600,000 Frenchmen entered Spain at different times by the two great roads of Bayonne and Perpignan. There returned into France at various times about 250,000. The other 350,000 did not return. Making full deduction for those who remained prisoners in the hands of the Spaniards and English and were afterwards set free at the peace of 1814, the number who perished during that war cannot be estimated at less than 250,000, if it does not approach rather 300,000. (Schepeler and Foy.) The loss of the Spaniards, soldiers and peasants, who were destroyed in detail on almost every spot in the Peninsula, cannot be calculated, but it must have been greater than that of the French.

In the year 1808 Napoleon re-established titles of nobility in France. Lefebvre, who had taken Danzig the year before, was the first duke that he created. Many others, both military and civilians, received titles from towns in Italy and Germany, with an income charged upon the revenues or national domains of the conquered countries. Both the titles and the incomes attached to them were made hereditary.

In September, 1808, Napoleon repaired to Erfurt to hold conferences with the Emperor Alexander. The subject of these conferences remained a secret, but it would seem that the question of Turkey was agitated. Napoleon says that the principal obstacle to a partition of that country was Constantinople. It seems however that he consented to Russia encroaching on the frontier provinces of Turkey, as the Russian troops invaded Moldavia and Wallachia soon after the conference. On returning from Erfurt, Napoleon told his Senate that he and the emperor of Russia were irrevocably united in a bond of alliance.

The English in the mean time had reconquered Portugal, and were advancing to the assistance of the Spaniards. King Joseph had been obliged to leave Madrid, and the French armies had withdrawn behind the Ebro. Napoleon resolved to set out for Spain himself. On the 25th October he opened in person the session of the legislative body with one of his characteristic speeches:—'The hideous presence of the English leopards contaminates the continent of Spain and

Portugal. I go to place myself at the head of my armies, to crown my brother at Madrid, and to plant the French eagles on the ramparts of Lisbon.' Two days afterwards he set off for Spain.

On the 23rd November, 1808, Napoleon defeated the Spanish troops at Tudela, and on the 4th December Madrid capitulated. He told the Spanish deputation that their grand-children would bless his memory. He then set off for Astorga, expecting to intercept Sir John Moore in his retreat. In this however he did not succeed, and leaving the task of pursuing the English to Soult and Ney, he suddenly quitted Astorga, and returned in great haste to France in January, 1809.

A new Austrian war was on the point of breaking out. This time Austria came single into the field. She had made astonishing exertions to recruit her armies to the number of nearly half a million of men. Austria had apparently no new personal subject of complaint, except the alarm she naturally felt at the rapid strides of Napoleon towards universal dominion. The Archduke Charles commanded the Austrian army of Germany, and the Archduke John that of Italy. The Austrians crossed the Inn on the 9th April, and occupied Bavaria and the Tyrol. Napoleon quickly assembled his army beyond the Rhine, repaired to Augsburg, and by one of his skilful manœuvres broke the line of the Austrians, gained the battle of Eckmühl, and obliged the Archduke Charles to retire into Bohemia, leaving the road to Vienna open to the French. (For the details of this campaign see General Pelet, *Mémoires sur la Guerre de 1809*, 4 vols. 8vo. Paris, 1824-26.) On the 12th May the French entered Vienna. The archduke now collected his army on the left bank of the Danube. Bonaparte crossed the river to attack him, and the great battle of Aspern took place, 21st May. The battle remained undecided; but on the following day it was renewed with fury on both sides, when, in the midst of the action, Bonaparte was informed that the bridge in his rear, which communicated with the right bank of the Danube, had been carried off by a flood. He then ordered a retreat, and withdrew his army into the island of Lobau in the middle of the Danube. The loss of the French was very great: Marshal Lannes was among the generals killed. Napoleon remained for six weeks on the island. Having re-established the bridge, and received reinforcements, he crossed once more to the left bank, when he fought the battle of Wagram, 6th July, in which he defeated the Austrians, with a tremendous loss on both sides. Still the Austrian army was not destroyed or dispersed, and the Archduke Charles was for continuing the struggle. Other counsels however prevailed, and an armistice was concluded at Znaim, and this led to the peace of Schönbrunn, which was not signed however till the 14th of October. Napoleon had entertained some idea of dismembering the Austrian empire; he had even addressed an invitation to the Hungarians to form an independent kingdom under a native ruler, but this address produced no effect. Germany began to be agitated by a spirit of popular resistance against him; bands of partizans under Schill, the Duke of Brunswick, and others, had appeared; Tyrol was still in arms, and he was not quite sure of Russia. The war in Spain continued with dubious success, and the English had landed a considerable force at Flushing. He thought best therefore to grant peace to Austria on moderate conditions. The Archduke Charles disapproved of the peace, and gave up his command. Austria ceded Trieste, Carniola, and part of Croatia, Salzburg, Cracow, and Western Galicia, and several other districts, to the amount of about two millions and a half of inhabitants. The brave Tyrolese were abandoned to their fate. Hofer and others of their chiefs were seized by the French, taken to Mantua, and there shot. (*Life of Andrew Hofer*, by Hall; and *Ingles's Tyrol*.)

Whether the subsequent marriage of Napoleon with a daughter of the Emperor Francis was in course of negotiation at the time of the peace of Schönbrunn has been doubted, but soon after his return to Paris he made known to his wife Josephine his determination to divorce her. A painful scene took place on this occasion, which is well described by De Bausset, prefect of the imperial household, in his *Mémoires Anecdotiques sur l'Intérieur du Palais*. Napoleon himself seems to have been sincerely affected by Josephine's grief, but his notion of the necessity of having an heir to the empire subdued his feelings. It is known that from the time of the conferences of Erfurt, and perhaps of

Tilsit, he had had in view a marriage with one of Alexander's sisters, and the project had been communicated to the Russian court, but the empress-mother had always objected to it on the plea of difference of religion. The divorce being consented to by Josephine in presence of commissioners from the Senate, the act was solemnly passed and registered on the 16th of December, 1809. On the 11th of March, 1810, Napoleon married by proxy the Archduchess Maria Louisa, who soon after set off for Paris. The marriage ceremony was performed at Paris by Cardinal Fesch.

The years 1810 and 1811 were the period of Napoleon's greatest power. There is an interesting report made by Count Montalivet of the situation of the French empire in 1810, which displays the gigantic extent of its dominions. One passage which refers to Holland is curious. That country was under the government of Louis Bonaparte, who felt really anxious for the welfare of his Dutch subjects, and did not enforce very strictly the continental system, as it was styled, against English trade. This led to frequent reproaches from his imperious brother, who at last resolved to enforce his own decrees himself by uniting Holland to the French empire. (Louis Bonaparte's *Historical Documents and Reflections on the Government of Holland*.) Count Montalivet in his report made use of a curious argument to prepare the people's minds for this measure:—'Holland,' he said, 'is in reality a continuation of France; it may be defined as being formed out of the alluvia of the Rhine, the Meuse, and the Scheldt, which are the great arteries of the empire.' And Champagny, minister for foreign affairs, in a report to the emperor said:—'Holland is an emanation of the French empire. In order to possess the Rhine, your Majesty must extend your territory to the Zuyderzee.' But even the Zuyderzee was not far enough. By a *Senatus Consultum*, 13th December, 1810, Holland, Friesland, Oldenburg, Bremen, and all the [line of coast to Hamburg, and the country between that town and Lubeck, were annexed to the French empire, of which this new territory formed ten additional departments. The French empire now extended from the frontiers of Denmark to those of Naples, for Napoleon had finally annexed Rome and the southern papal provinces to France. The pope launched a bull of excommunication against Napoleon, upon which he was arrested in his palace on the Quirinal in the middle of the night of the 5th July, 1809, by a party of gendarmes who escaladed the walls, and was carried off to Savona, where he was kept prisoner until he was removed to Fontainebleau. (For an account of these proceedings see *Memoria del Cardinal Pacca*, with the *Rélation de l'Enlèvement du Pape Pie VII. et de son Voyage jusqu'à Florence*, par le Baron Radet, in the Appendix.) Radet was the colonel of gendarmes who seized the person of the pope. The papal territory was divided into two departments of the French empire, called of Rome and of the Thrasymene, of which last Perugia was the head town. Napoleon gave his 'good city of Rome' the rank of second town in the French empire.

Besides the French empire, which, thus extended, reckoned 130 departments and 42 millions of people, Napoleon held under his sway the kingdom of Italy, which included Lombardy and Venice, Modena, Bologna, and the other legations and the marches, with above six millions of inhabitants; and the Illyrian provinces, including Dalmatia, Carniola, and part of Croatia, which formed a separate government. The kingdom of Naples, with about five millions more, was also dependent on his will, as well as the kingdom of Westphalia, the grand duchy of Berg, &c. The policy of Napoleon towards the countries which he bestowed on his brothers and other relatives was plainly stated by himself to his brother Lucien, in an interview at Mantua in 1811. 'In the interior, as well as the exterior, all my relatives must follow my orders: every thing must be subservient to the interest of France; conscription, laws, taxes, all must be in your respective states for the advantage and support of my crown. I should otherwise act against my duty and my interest. No doubt you would like to act the part of a Medici at Florence' (there had been some talk about placing Lucien over Tuscany), 'but were I to allow you to do so, it is clear that Tuscany, happy and tranquil, would become an object of envy to the French.' He would not allow his brothers to identify themselves with their subjects, and to strengthen themselves on their thrones, because he foresaw that it might suit him some day to remove them on the occasion of a general peace, or upon some new scheme

of his own. He sacrificed the people of those countries and their interests, as well as the happiness and the greatness of his brothers, to what he conceived to be the interest and the glory of France. (*Réponse de Lucien Bonaparte aux Mémoires de Lamarque*.) But even his brothers were restive under this discipline. Louis ran away from his kingdom of Holland; Murat was in continual disputes with his brother-in-law (Colletta, *Storia del Reame di Napoli*), and Lucien would not accept any crown under such conditions.

As Protector of the Confederation of the Rhine, Napoleon had under his orders the Kings of Saxony, Bavaria, and Würtemberg, the Grand Duke of Baden, and the other German princes. He had also under his protection the Helvetic Confederation, which was bound to furnish him with troops, and to follow his policy. Prussia, humbled and dismembered, lay entirely at his mercy. He could thus dispose of more than eighty millions of people. Never, since the fall of the Roman empire, had so great a part of Europe been subject to the will of one man. Austria was his ally through fear as well as by family connexion; Russia through prudence and self-interest. In Sweden, General Bernadotte had been chosen Crown Prince, and, after obtaining Napoleon's consent, had repaired to Stockholm. Spain, bleeding at every pore, struggled hard, and apparently with little hope of ultimate success. Britain alone continued to defy his power, and held Sicily and Portugal under her protection. Such was the political condition of Europe at the beginning of 1811. In the month of March of that year Maria Louisa was delivered of a son, who was saluted by Napoleon as 'King of Rome,' an ominous title to those Italians who still fancied that the crown of Italy was to be, according to Napoleon's promise, separated from that of France.

In 1811 the first symptoms of coolness between Alexander and Napoleon manifested themselves. The complaints of the Russian landholders against the continental system, which prevented their exporting by sea the produce of their vast estates, had induced Alexander to issue an ukase, 31st December, 1810, by which colonial and other goods were allowed to be imported into the ports of Russia, unless they appeared to belong to subjects of Great Britain. This last restriction was of course easily evaded, and the trade with England might be said to be in reality opened again. This was soon made a ground of complaint on the part of Napoleon. The Russian emperor, on his side, complained that his relative, the Duke of Oldenburg, had been dispossessed of his territory contrary to the treaty of Tilsit. A third subject of difference was concerning Poland. Napoleon having, by the peace of Schönbrunn, united western Galicia and Cracow to the duchy of Warsaw, seemed to encourage the prospect of re-establishing the whole of Poland as an independent state. But there was another and a deeper feeling of mistrust and insecurity on the part of the emperor, and the nobility of Russia in general, at the evident assumption of universal dictatorship by Napoleon, especially since his marriage with an Austrian archduchess. At Tilsit he had been willing to share the empire of the world with Russia, but now he would 'have no brother near his throne.' He summoned Sweden, in an imperious manner, to enforce his decrees against the British trade, while his armed vessels and privateers in the Baltic seized upon fifty Swedish merchantmen, which were confiscated, upon the charge of contraband trade with England. Lastly, in January, 1812, General Davoust was sent to take possession of Swedish Pomerania and the island of Rugen. This act of aggression induced the crown prince, Bernadotte, to sign a treaty of alliance with the Emperor Alexander in March, 1812. In the interview between these two princes at Abo in Finland, the plan of resistance to Napoleon was settled. Russia had not yet declared war, but she reinforced her armies, waiting to be attacked. Napoleon was pouring troops into Prussia, Pomerania, and the duchy of Warsaw.

Some of the older and wiser counsellors of Napoleon had the courage to remonstrate with him, not on the injustice, but on the impolicy of this new act of aggression. Fouché presented him an eloquent memorial on the occasion. 'I regulate my conduct,' answered Napoleon, 'chiefly by the opinion of my army. With 800,000 men I can oblige all Europe to do my bidding. I will destroy all English influence in Russia, and then Spain will easily fall. My destiny is not yet accomplished; my present situation is but the outline of a picture, which I must fill up. I must make one nation out of all the European states, and Paris must be

the capital of the world. There must be all over Europe but one code, one court of appeal, one currency, one system of weights and measures. Am I to blame if the great power which I have already attained forces me to assume the dictatorship of the world?' (Fouché's *Memoirs*.) And to De Pradt at Dresden he said, 'I will destroy Russian influence in Europe. Two battles will do the business: the Emperor Alexander will come on his knees, and Russia shall be disarmed. Spain costs me very dear: without that I should be master of the world; but when I become such, my son will have nothing to do but to retain my place.' In calmer times, and after the full experience of disappointment, we find him confirming the sentiments he had expressed on the former memorable occasions. After his return from Elba, he said to Benjamin Constant, 'I desired the empire of the world, and who in my situation would not? The world invited me to govern it; sovereigns and subjects vied with each other in bending before my sceptre. I have rarely found any opposition in France.' And later at St. Helena, 'If I have been on the point of accomplishing the universal monarchy, it was without any original design, and because I was led to it step after step. The last effort wanting to arrive at it seemed so trifling, was it unreasonable to attempt it? . . . But I had no ambition distinct from that of France, her glory, her ascendancy, her majesty, with which my own were identified. Had I lived in America, I should willingly have been a Washington; but had Washington been in France, exposed to discord within and attack from without, I would have defied him to be what he was in America.' . . . (Las Cases, vol. i.) 'I have been spoiled by success. I have always been in supreme command: from my first entrance into life I have enjoyed high power; and circumstances, and my own energy of character, have been such, that from the instant I gained military superiority, I acknowledged neither masters nor laws.' (Las Cases, vol. iv., part i.)

The events of the memorable Russian campaign of 1812 are known to the world. We can only refer our readers to the works of Segur, and of Colonel Boutourlin, aide-de-camp to the Emperor Alexander; to the memoirs of Oginski; and to the Italian account of Captain Laugier, *Gli Italiani in Russia*. By consulting these various authorities, a sum of very correct information concerning that stupendous catastrophe may be obtained.

Before Napoleon set off from Paris for the Russian expedition, he directed Maret, Duke of Bassano, to write a letter to Lord Castlereagh proposing negotiations for peace, on the basis of the *uti possidetis*. He was willing this time to let Sicily remain under Ferdinand, and Portugal under the House of Braganza, but he insisted on Spain being secured to his brother Joseph. It must be observed that Lord Wellington had just taken possession of Badajoz and Ciudad Rodrigo, and was advancing into Spain towards Madrid, which he shortly after entered upon gaining the battle of Salamanca. The English minister immediately replied, that England's engagements with the Spanish Cortes, acting in the name of King Ferdinand VII., rendered the acknowledgment of Joseph impossible.

The Russian minister, Prince Kourakin, still remained at Paris. Early in May he presented an official note to the Duke of Bassano, stating that the matters in dispute between the two empires might easily be made the subject of amicable negotiations, provided the French troops should evacuate Pomerania and the duchy of Warsaw, where they could be for no other purpose than that of threatening the frontiers of Russia. Napoleon pretended to be exceedingly angry at this demand, which he said was insolent, adding that he was not used to be addressed in such a style, and to have his movements dictated by a foreign sovereign; and he sent Prince Kourakin his passports. On the 9th of May he himself set off with his empress for Dresden, where he had invited the kings of his own creation, Bavaria, Wurtemberg, Saxony, Westphalia, and his other tributaries, to meet him. The emperor of Austria also repaired to Dresden with his empress. The king of Prussia came too, as he had just signed a treaty with Napoleon, by which he placed 20,000 men at his disposal in the approaching campaign. Austria agreed to furnish 30,000 men to act against Russian Poland. Napoleon sent the Count de Narbonne to Wilna, where the emperor Alexander then was, to invite him to come to Dresden, but Alexander declined. After brilliant festivals, Napoleon quitted Dresden for Thorn, where he arrived on the 2nd of June. His immense army was assem-

bled chiefly between the Vistula and the Niemen, which latter river formed the boundary of the Russian empire. There were 270,000 French, 60,000 Germans of the Confederation of the Rhine, 30,000 Poles under Prince Poniatowski, 20,000 Italians under Eugene, and 20,000 Prussians. On the 22nd of June Napoleon issued a proclamation to his soldiers, saying 'that the second war of Poland had begun. The fate of Russia must be fulfilled. Let us cross the Niemen, and carry the war into her own territory,' &c. On the 24th and 25th of June Napoleon's army, in three large masses, crossed the Niemen, and entered Lithuania without meeting with any opposition. The Russian army, under General Barclay de Tolly, 120,000 strong, evacuated Wilna, and retired to the banks of the Dwina. Another Russian army, 80,000 strong, under Prince Bagration, was stationed near the Dnieper. On the 28th of June Napoleon entered Wilna, where he remained till the 16th of July. He there received a deputation from the diet of the duchy of Warsaw, entreating him to proclaim the union and independence of Poland. Napoleon's answer was still cold and cautious: he told them that he had guaranteed to the emperor of Austria the part of Poland he still retained; that for the rest they must depend chiefly on their own efforts. (*De Pradt, Ambassade de Pologne.*)

In the meantime, the French soldiers treated Lithuania as an enemy's country. The provisions ordered by Napoleon to follow his army not having arrived, and the Russians having removed all the stores, the French and German soldiers went about marauding, plundering alike the mansions of the nobility and the huts of the peasants, feeding their horses on the green corn, violating the women, and killing those who resented such treatment. (Oginski and Segur.) Lithuania, a poor and thinly-inhabited country, which had suffered from the bad harvest of the preceding year (1811), was utterly devastated. At the same time, disorganization and demoralization spread fearfully through the enormous masses of the invaders; disease thinned the ranks; 25,000 patients were crowded within Wilna in a few weeks, where there was not accommodation for one-third of the number; heavy rains rendered the roads unpassable, and 10,000 horses were lost.

After partial engagements at Mohilow and Witepsk, the Russians continued their retreat upon Smolensk, in the interior of Russia. Napoleon determined to follow them. 'Forward marches alone,' he observed, 'can keep such a vast army in its present condition together; to halt or retire would be the signal of dissolution. It is an army of attack, not of defence; an army of operation, not of position. We must advance upon Moscow, and strike a blow in order to obtain peace, or resting quarters and supplies.' (Segur.) He crossed the Dnieper, and entered Russia Proper with about 180,000 men, leaving a body of reserve at Wilna and the corps of Macdonald on the Dwina, towards Riga. In his march through Lithuania, no less than 100,000 men had dropped off from his ranks, and were either dead or sick, or had been taken prisoners by the Cossacks, or were straggling and marauding about the country.

On the 16th of August the two hostile armies met under the walls of Smolensk. But the Russians, after carrying off or destroying the provisions, and allowing time to the inhabitants to remove themselves, evacuated Smolensk, which their rear-guard set on fire. They continued their retreat upon Moscow, and Napoleon followed them. The battle of Borodino, near the banks of the river Moskwa, was fought on the 7th September. The two armies were nearly equal in numbers, 120,000 each. After a dreadful slaughter on both sides, the Russian general sounded a retreat, and the French were left in possession of the bloody field; but the French took hardly any prisoners or guns: 15,000 Russians, and about 10,000 Frenchmen lay dead. Next day the Russian army continued its retreat; and on the 14th of September it traversed the city of Moscow, which most of the inhabitants had already evacuated. On that same day the French entered Moscow and found it deserted, except by the convicts and some of the lowest class, who lingered behind for the sake of plunder. On the evening of this day a fire broke out in the coachmakers' street, but it was put down in the night. On the next day, 15th, Napoleon took up his residence in the Kremlin, the ancient palace of the Tsars. On the following night the fire burst out again in different quarters of the city, and no exertions of the French could stop it: the wind spread the flames all over the city, and on the third day Napoleon was obliged to leave the Kremlin.

lin, where he stood in imminent danger. The fire raged till the 19th, when it abated, after destroying 7682 houses, about four-fifths of the town. This burning of Moscow has been attributed to a premeditated plan of the Russians; but Count Rostopchin, the governor, has denied this positively.

Several individuals,' he says, 'set fire to their own houses, rather than leave them in possession of the invaders, and the French soldiers seeking for plunder, or for wine and spirits in the cellars, where they got intoxicated, did the rest.' (*La Vérité sur l'Incendie de Moscou*, par le Comte Rostopchin, Paris, 1823.)

The markets of Moscow used to be supplied, not from the immediate neighbourhood, but from a considerable distance in the interior, and especially from the southern districts towards Kaluga, where the Russian army was now posted. The French therefore could get no provisions, and they were obliged to live chiefly on the flesh of their horses, which was salted down.

Napoleon remained among the ruins of Moscow for five weeks. He had sent Lauriston to the Russian head-quarters with a letter for the Emperor Alexander; the letter was forwarded to Petersburg, but no answer was returned. Napoleon was deceived in his calculations upon the temper of Alexander, and of the Russian people. At last, on the 19th October, seeing no chance of making peace, Napoleon began his retreat. The weather was fine and moderately cold. He attempted first to retire by Kaluga, where he expected to find provisions, but the stout resistance he met at Malo Yaroslavetz induced him reluctantly to turn again to the road by Varsia and Viazma to Smolensk, by which he had advanced. He was closely followed by the Russian army, but was more especially harassed by swarms of Cossacks under the Hetman Platoff. His rear divisions had sharp engagements at Viazma and at the passage of the Wop. (*Gl' Italiani in Russia*.) His army dwindled away apace, through fatigue, privations, and the constant attacks of the Cossacks. It had left Moscow 120,000 strong, but was now reduced to one-half that number of fighting men: the rest formed a confused and disorderly mass in the rear, with an immense train of baggage and artillery. In this condition they were overtaken on the 6th November by the Russian winter, which that year set in earlier than usual. The emaciated frames of soldiers and horses could not resist this fresh enemy, and they dropped by thousands on the road, where they were soon buried under the snow. The bitter frosty nights killed thousands more; but the winter only completed the destruction of the army, which had begun during the advance in the summer. The wretchedness and the sufferings of the retreat from Moscow must be read in the works already referred to. The French at last reached Smolensk, where they found their stores, which had come up so far. Many had not tasted a piece of bread or biscuit since they had advanced through that town three months before. On the 14th November Napoleon left Smolensk with about 40,000 men able to carry arms. His rear divisions had now to sustain repeated attacks from the Russians, and when he arrived at Orsa, in Lithuania, he had only 12,000 men with arms in their hands. Of 40,000 horses there were hardly 3000 left. In this plight he reached the banks of the Berezina, where he was joined by a corps of reserve of nearly 50,000 men, under Victor and Oudinot. The passage of the Berezina, 26th and 27th November, cost him about one-half of his army thus reinforced. On the 3rd December Napoleon arrived at Malodeczno, whence he issued the famous 29th bulletin, which came like a clap of thunder to awaken Europe. This time he told the whole truth in all its sternness: except the guards, he had no longer an army. At Smorgoni, where he arrived on the 5th December, he took leave of his generals, left the command of the army, such as it was, to Murat, and set off in a sledge with Caulaincourt to return to Paris. He arrived at Warsaw on the 10th, where he had that curious conversation with De Pradt, which the latter has so humorously related. Continuing his route, he passed through Dresden on the 14th, and arrived at Paris on the 18th December at night. The remains of his unfortunate army were collected by Murat on the line of the Vistula. The report of the chief of the staff, Berthier, dated 16th December, gives a dismal picture of the state of the troops after Napoleon left them:—'The plunder, insubordination, and disorganization have reached the highest pitch.' The loss of the French and their auxiliaries in this campaign is reckoned by Boutourlin at

125,000 slain, 132,000 dead of fatigue, hunger, disease, and cold, and 193,000 prisoners, including 3000 officers and 48 generals. The 'St. Petersburg Gazette' stated that the bodies burnt in the spring after the thaw, in Russia Proper and Lithuania, amounted to 308,000, of which of course a considerable proportion were Russians. In the Berezina alone, and the adjoining marshes, 36,000 dead bodies were said to have been found. The French left behind 900 pieces of cannon and 25,000 waggons, cassoons, &c.

Napoleon, after his return to Paris, exerted himself to recruit his army by fresh conscriptions, by drafting the national guards into his skeleton battalions, by recalling all the men he could spare from Spain, and by sending the sailors of his fleet to serve on land. He thus collected again in Germany, in the spring of 1813, an army of 350,000 men. The King of Prussia had now allied himself to Alexander, and the Allies had advanced as far as the Elbe. Austria remained neutral; she offered her mediation, but Napoleon would hear of no cession on his part, in either Germany, Italy, or Spain. He soon after repaired to Germany, where he fought and won the battle of Lutzen, 2nd May, 1813, from the Russians and Prussians united. On the 21st he attacked them again at Bautzen, and obliged them to retire. But these victories led to no decisive results; the Allies retired in good order, and lost few prisoners and no guns. Bonaparte bitterly complained of this, and his generals observed to each other, that these were no longer the days of Marengo, Austerlitz, or Jena, when one battle decided the fate of the war. On the 22nd May, in another engagement with the retreating Allies, Duroc, his old and most faithful companion, who was one of the few personally attached to him, was struck by a cannon-ball and dreadfully mangled. The dying man was taken to the house of a clergyman near the spot. Napoleon went to see him and was deeply affected. It was the only instance in which he refused to attend to the military reports which were brought to him. 'Every thing to-morrow,' was his answer to his aides-de-camp. He had a few days before lost another of his old brother-officers, Bessieres.

An armistice was now agreed to on the 4th June, and Bonaparte returned to Dresden, where Metternich came with fresh offers of mediation on the part of Austria. Austria proposed, as a principal condition, that Germany should be evacuated by the French arms, and the boundaries of the French empire should be fixed at the Rhine, as Napoleon himself had repeatedly declared. But Napoleon would not hear of giving up the new departments which he had annexed as far as Hamburg and Lubeck, nor would he resign the Protectorate of Germany. This led to a warm discussion, in which Napoleon said he only wished Austria to remain neutral while he fought the Russians and Prussians, and he offered to restore to her the Illyrian provinces as the price of her neutrality. Metternich replied that things had come to that pass that Austria could no longer remain neutral; she must be either with France or against France; that Germany had been long enough tormented by these wars, and it was time she should be left to rest and to national independence. The conferences however were carried on at Prague, without coming to any agreement; and in the midst of this the armistice expired 10th August, and Austria joined the allies.

A series of battles were fought about Dresden on the 24th, 25th, and 27th August between the Austrians and Prussians on one side and the French on the other, in which the latter had the advantage. But in pursuing the allies into Bohemia, Vandamme, with a corps of 30,000, was surrounded, and made prisoner with 8000 men at Culm. Oudinot was likewise worsted at Gross Beeren by the Swedes and Prussians under Bernadotte. Ney, who was sent by Napoleon to replace Oudinot, lost the battle of Dennewitz 6th September, near Berlin. On the Katzbach, in Silesia, Blücher routed the French opposed to him. The month of September passed in this desultory warfare, Napoleon's armies losing ground and strength on every side. Bavaria made a separate peace with Austria. The Saxons and other German troops began to forsake the French cause. At last, after a painful struggle between pride and necessity, Napoleon was obliged to begin his retreat upon Leipzig, followed by the allies. At Leipzig he determined to make a final stand. 'One victory alone,' he said, 'and Germany might still be his.' On the 16th October the first battle of Leipzig took place. It was fought gallantly on both sides, but the allies had now a

great superiority in numbers, and the French were driven close upon the ramparts of the town. The 17th passed without fighting; on the 18th the battle was renewed, the French divisions lost ground, and a body of 10,000 Saxons left them and went over to the enemy. Napoleon now made his dispositions to effect his retreat towards the Rhine. But while his army was filing out of Leipzig by a long bridge, or rather a succession of bridges in the morning of the 19th, the allies forced their way into the town after a desperate resistance, and the bridge being blown up, 25,000 Frenchmen were obliged to surrender prisoners of war. The retreat from Leipzig was nearly as disastrous to Napoleon as that from Moscow. His army was completely disorganized. He was however able to fight his way at Hanau, 30th October, through the Bavarians, his late allies, who now wanted to oppose his passage. At last he reached the Rhine, and passing over the 70,000 or 80,000 men, all that remained out of an army of 350,000, with which he had begun the campaign, he placed them on the left bank while he set off for Paris, where he arrived on the 9th November. (For the particulars of this hard-contested campaign of 1813, see Odeleben's narrative.) About 80,000 men left in the Prussian garrisons Magdeburg, Danzig, Stettin, &c. surrendered to the allies.

The enormous losses and reverses of the French armies, and the approach of the allies to the frontiers of France, produced a strong feeling of dissatisfaction in that country. The legislative body showed for the first time a spirit of opposition to the headlong system of Napoleon. A committee was appointed to draw up a report on the state of the nation; Raynouard, Lainé, Gallois, and other members who had a character for independence, were of the committee. The report which they laid before the legislative body 28th December, 1813, expressed a desire for peace consistent with the honour and the welfare of France, and a wish to know what steps the emperor had taken to attain so desirable an object, and it ended by saying that 'while the government will take the most effective measures for the safety of the country, his Majesty should be entreated to maintain and enforce the entire and constant execution of the laws which ensure to the French citizens the rights of liberty, property, and security, and to the nation the free exercise of its political rights. The legislative body by a large majority ordered the report to be printed. This was a language which Napoleon had not been used to. He immediately ordered the doors of the hall of the legislative body to be closed and guarded by soldiers, and the copies of the report to be seized at the printer's. On the 31st an imperial decree adjourned the legislative body. On the 1st of January, 1814, several members of the legislative body having appeared at his levee, he gave vent to his ill humour in a violent and coarse address, told them that they were not the representatives of the nation, but only the representatives of the individual departments; that he was the only representative of the people; that their report and the address founded upon it were seditious; that they ought not thus publicly to have commented on his conduct; and he ended by saying—'France stands more in need of me than I stand in need of France.' The senate, more subservient, had already passed a decree for a new conscription of 300,000 men, including all those who had escaped the conscriptions of former years. The taxes were at the same time ordered to be doubled; but the people were weary of these never-ending sacrifices, and in many departments it was found difficult to collect either men or money. Napoleon's disposable army on the Rhine amounted to no more than from 70,000 to 80,000 men. He had to contend with twice that number, besides numerous reinforcements which were hastening through Germany. Mean-time conferences were held at Chatillon, in which the allies proposed to fix the limits of France as they were in 1792, that is to say, with the exclusion of Belgium; but Napoleon would not listen to this. It was his last chance of peace. At the end of January, 1814, Napoleon began the campaign, which has been considered by tacticians as that in which he most strikingly displayed his astonishing genius for military combinations, fertility of resources, and quickness of movements. For more than two months he held at bay the various armies of the allies, now beating one corps and then flying to attack another; at times severely checked himself, and yet recovering his strength the next day. (*Memoirs of the Operations of the Allied Armies in 1813-14*. London, 1822, and Koch, *Mémoires pour servir à l'Histoire*

de la Campagne de 1814.) But the odds were too many against him. While he by a bold movement placed himself in the rear of the allies, the latter marched upon Paris, and after a hard-fought battle, 30th March, took possession of the whole line of defence which protected that city on the north-eastern side. The empress had left it for Blois, and Joseph Bonaparte, after the battle of the 30th, quitted Paris also. Marshal Marmont asked for an armistice, and this led to the capitulation of Paris, which the emperor Alexander and the king of Prussia entered on the 31st, amidst the loud acclamations of the Parisians. Napoleon hearing of the attack upon Paris had fallen back to the relief of the capital, but it was too late. He met near Fontainebleau the columns of the garrison, which were evacuating the city. His own generals told him that he ought now to abdicate, as the allied sovereigns had declared that they would no longer treat with him. Mean-time a decree of the senate declared that Napoleon Bonaparte, in consequence of sundry arbitrary acts and violations of the constitution (which were specified and classed under various heads in the preamble to the decree), and by his refusing to treat with the allies upon honourable conditions, had forfeited the throne and the right of inheritance established in his family, and that the people and the army of France were freed from their oath of allegiance to him. A provisional government was formed, consisting of Talleyrand, Bournonville, Dalberg, and others. Upon this, Bonaparte, after much reluctance, and upon his generals refusing to join him in a last desperate attempt upon Paris, which he meditated, signed the act of abdication at Fontainebleau on the 4th of April, 1814. In this first act there was a reservation in favour of the rights of the empress and of his son. By a second act however he 'renounced unconditionally' for himself and his heirs the throne of France and Italy. The emperor Alexander proposed that he should retain the title of emperor with the sovereignty of the island of Elba, and a revenue of six millions of francs to be paid by France. This was agreed to by Prussia and Austria; and England, though no party to the treaty, afterwards acceded to it. On the 20th April, Napoleon, after taking an affectionate leave of his generals and his guards, left Fontainebleau for Elba. He ran some danger from the populace in passing through Provence, but arrived safe at Fréjus, where he embarked on board the British frigate the *Undaunted*, and on the 4th of May landed at Porto Ferrajo, in the island of Elba. (See for the history of all these transactions in France, Baron Fain, *Manuscrit de 1814*. See also the *Narrative of Napoleon Bonaparte's Journey from Fontainebleau to Fréjus in April 1814*, by Count Truchses Waldburg, attendant Prussian commissary.) Napoleon's interview on the road with Augereau, who had issued an abusive proclamation against him, and other curious particulars concerning Napoleon's conduct on his journey, are contained in the latter work.

Napoleon remained in the Island of Elba about ten months. At first he seemed reconciled to his lot, set about making roads, improving the fortifications, &c.; but after some months, he was observed to become more reserved, gloomy, and frequently absent and lost in thought. He was, in fact, at the time, engaged in secret correspondence with his friends in France and Italy. During so many years of supreme power, attended by most splendid successes, he had formed, of course, many adherents; men whose fortune was dependent on his; most of whom had lost their emoluments and prospects by his fall: the bold and aspiring, the reckless and restless, saw no further prospect of conquest and new organization of foreign states, which left at Napoleon's disposal thousands of offices and situations with which to reward his partizans. The old soldiers, to whom the camp had become a home, regretted him who used to lead them from victory to victory, affording them free quarters, a continual change of scenery, and pleasant entertainments in the finest cities of Europe. His brothers, sisters, and other relatives, all rich, some still powerful, as Murat at Naples, felt that by his fall they had lost the main prop of their family. On the other side, the restored Bourbons had committed faults, and had listened perhaps too much to the old emigrants by whom they were surrounded; and lastly, France in general had been too long in a state of violent excitement to subside at once into quiet and contented repose. Many of the subordinate agents of the police, post office, and other departments, were in Napoleon's interest. A wide conspiracy was formed, the old republicans

joined the Bonapartists, and Napoleon was invited to return to France. (See, in Fleury de Chabulon's *History of the 100 Days*, an account of the intrigues carried on with Elba.)

On the 26th of February, 1815, Napoleon embarked with about 1000 men of his old guards, who had followed him to Elba, and landed on the 1st of March at Cannes, not far from Fréjus. At Grenoble, the first defection of the army took place: Colonel Labedoyere, commanding the 7th regt. of the line, joined Napoleon; the rest of the march to Paris was a triumphant one. The Bourbons were abandoned by the whole army; and Marshal Ney, sent by Louis XVIII. to stop Napoleon's progress, went over to him; Macdonald and Marmont, and several other Marshals remained faithful to the oath they had taken to the King. Augereau also kept aloof from Napoleon; but the Bourbons had no troops they could depend upon. Napoleon arrived at the Tuileries on the 20th of March, Louis XVIII. having left the capital early in the morning by the road to Flanders. Napoleon's return to Paris was accompanied with the acclamations of the military, and the lower classes in the suburbs; but the great body of the citizens looked on 'astounded and silent: he was recalled by a party, but evidently not by the body of the nation.

The Congress of Vienna was still sitting, when Talleyrand laid before them the news of Bonaparte's landing at Cannes. They immediately agreed to join again their forces, in order to frustrate his attempt, and to maintain entire the execution of the treaty of Paris, of the 30th May, 1814, made with France under the constitutional monarchy of the Bourbon dynasty. The Austrian, Russian, and Prussian armies, which had evacuated France, resumed their march towards the frontiers of that country.

Napoleon found, on his return to Paris, that he could not resume the unlimited authority which he had before his abdication. The republicans and constitutionalists who had assisted, or not opposed his return, with Carnot, Fouché, Benjamin Constant, and his own brother Lucien at their head, would support him only on condition of his reigning as a constitutional sovereign: he therefore proclaimed a constitution under the title of 'Acte additionnel aux Constitutions de l'Empire,' which greatly resembled the charter granted by Louis XVIII. the year before. There were to be an hereditary chamber of peers appointed by the emperor, a chamber of representatives elected by the electoral colleges, and to be renewed every five years, by which all taxes were to be voted; ministers were to be responsible; judges irremovable; the right of petition was acknowledged, and property was declared inviolable. Lastly, the French nation was made to declare, that they would never recall the Bourbons; deputies from the departments came to Paris to swear to the additional act, at the Champ de Mai, as it was called, although held on the 1st of June. The Emperor and his brothers were present at the ceremony.

The chambers opened on the 4th of June, while Napoleon prepared to march towards the frontiers of Flanders, where the allied English and Prussian armies were gathering. He assembled an army of about 125,000 men, chiefly old troops, of whom 25,000 were cavalry, and 350 pieces of cannon, with which he advanced upon Charleroi on the 15th June. Ney, Soult, and Grouchy held commands under Napoleon. On the 16th Napoleon attacked in person Marshal Blücher, who was posted with 80,000 men at Ligny, and drove him back with great loss. At the same time he sent Ney against part of the English army at Quatre Bras, which, after sustaining a severe attack, retained possession of the field. In the morning of the 17th, the Duke of Wellington, in consequence of Blücher's retreat, fell back with his army to the position of Waterloo. Napoleon followed him, after dispatching, on the 17th, Grouchy, with a body of 30,000 men, to follow the retreat of the Prussians. (Grouchy's *Observations sur la Relation de la Campagne de 1815, par le General Gourgaud*, Philadelphia, 1818.) On the 18th the famous battle of Waterloo took place. Napoleon's army on the field was about 75,000, and Wellington's force opposed to him consisted of 54,000 men actually engaged at Waterloo, the rest, about 16,000, being stationed near Hal, and covering the approach to Brussels on that side. There were 32,000 British soldiers, including the German Legion; the rest was composed of Belgians, Dutch, and Nassau troops. The events of the battle are well known. The French made several furious attacks with infantry and cavalry upon the British line, gained some advantages, took possession of La Haye Sainte, but all the efforts of

their cavalry could not break the British squares. In these repeated attacks, the French cavalry was nearly destroyed. At six o'clock, Bulow's Prussian corps appeared on the field of battle, and soon after, Blücher came in person with two more corps. Napoleon now made a last desperate effort to break the English line, before the Prussians could act: he directed his guard, which had not yet taken part in the action, to advance in two columns against the English. They were received with a tremendous fire of artillery and musketry; they attempted to deploy, but in so doing became confused, and at last gave way. Napoleon, who was following with his eye, through a spy glass, the motions of his favourite guards, turned pale and exclaimed, 'They are mixed together!' and galloped off the field. (See and compare the various accounts of the battle of Waterloo, by English, French, and Prussian military writers; among the rest, Captain Pringle, of the Engineers; Captain Batty; Baron Muffling, under the assumed initials of C. de W., *Histoire de la Campagne de l'armée Anglaise et de l'armée Prussienne en 1815*, Stuttgart, 1817; Gourgaud's *Narrative of the War of 1815*, with Grouchy's important comments upon it; Foy, *Campagne de 1815*; Napoleon's own account in Montholon and Las Cases, and in the *Memoires Historiques*, published by O'Meara; Ney's *Letter to the Duke of Otranto*, Paris, 1815; Rogniat's account of the battle, and the account in Sir W. Scott's life of Napoleon.)

The French accounts are evidently inaccurate as to several circumstances of the battle. One thing is certain, that Napoleon attacked the English repeatedly, with all his force, and was repulsed, with the loss of the flower of his troops: that after the last attack by his guards, at seven in the evening, which also failed, he had no reserve left; when the arrival of Blücher, with fresh troops on the field of battle, changed the repulse into a total defeat. The astonishing firmness of the British infantry (to which several French Generals, and Foy among the rest, have paid an eloquent tribute of praise) gained the day; Bonaparte's army fled in dreadful confusion, pursued by the Prussians, and lost cannon, baggage, and all. The loss of the English was 15,000 men in killed and wounded. On the same day, Grouchy was engaged at Wavre, thirteen miles distant, with one division of the Prussian army, which gave him full employment, while the other Prussian divisions were marching on to Waterloo. His orders were to follow the Prussians, and attack them wherever he met them. (Grouchy's *Observations*.) Napoleon seems to have underrated the strength of the Prussians, when he thought Grouchy's corps sufficient to keep in check the whole of their army.

The battle of Waterloo finally closed a war, or rather a succession of wars, which had lasted with little interruption for twenty-three years, beginning with 1792. As to these wars, Napoleon is only strictly accountable for those that took place after he had attained supreme power in France: in some of them, such as those of Spain and of Russia, he was decidedly the aggressor. Whether he did not likewise give sufficient provocation to those which Austria, England, and Prussia waged against him, the reader must judge for himself. His determination to be the dictator, the umpire of all Europe, left no chance of national independence to any one country: had he subjected all Europe, he would have reverted to his old scheme of the conquest of the East. Even his peace establishment, supposing him ever to have been at peace, was to consist of an army of 800,000 men, besides 400,000 of reserve. (Montholon's *Memoirs of Napoleon*, vol. i.) During the ten years of the empire, he raised by conscription two millions one hundred and seventy-three thousand men, of whom two-thirds, at the least, perished in foreign lands, or were maimed for life. See the *Memoirs of Larrey*, one of the chief surgeons of his army, about this frightful waste of human lives.

After the defeat of Waterloo, Napoleon having given his brother Jerome directions to rally the remains of the army, hurried back to Paris. The house of representatives declared itself permanent, and demanded his abdication. Lucien appeared before the house, and spoke eloquently of the former services of his brother, and of the claims which he had on the gratitude of France. 'We have followed your brother (answered Lafayette) over the sands of Africa, and through the frozen deserts of Russia; the whitened bones of Frenchmen scattered over every part of the globe bear witness to our long fidelity to him.' Lucien made no impression on the assembly. He advised his brother to dissolve the cham-

ber; Napoleon refused: 'It would be the signal,' he said, 'of civil war.' The house of peers had adopted the same views as the lower house. There was but one man, it was openly stated, between France and peace. Napoleon signed his second abdication on the 22nd of June; but this time it was of his own accord, and against the advice of his intimate friends, Carnot, Lucien, &c. (*Réponse de Lucien aux Mémoires de Lamarque.*) The abdication was in favour of his son, Napoleon II. A provisional government was appointed by the chambers, and they required that Napoleon should leave France, and embark at Rochefort for the United States. General Becker was appointed to escort him to Rochefort, where he arrived on the 3rd of July. All this did not take place, however, without many violent altercations in the chambers, and much reluctance on the part of Napoleon; for which, see Hobbhouse's *Letters from Paris during the last reign of Napoleon*, and Chabulon's *History of the 100 Days*. The allies, who entered Paris on the 7th of July, refused to acknowledge Napoleon's right to abdicate in favour of his son, and on the following day Louis XVIII. re-entered the capital, and resumed the government.

Napoleon at Rochefort, seeing that the whole country around him was submitting to the Bourbons, and finding that he had no chance of escaping by sea, through the vigilance of the English cruisers stationed along the coast, sent Count Las Cases and Savary to Captain Maitland, who commanded the English ship *Bellerophon*, to ask for leave to proceed to America, either in a French or a neutral vessel; Captain Maitland replied, 'That his instructions forbade this, but that if Napoleon chose to proceed to England, he would take him there on board the *Bellerophon*, without, however, entering into any promise as to the reception he might meet with there, as he was in total ignorance of the intentions of the British government as to his future disposal.' (Captain Maitland's statement of the whole transaction.) This offer was made by Captain Maitland, in his second interview with Las Cases, on the 14th July, and Napoleon had already, the day before, written a letter, addressed to the Prince Regent of England, saying, that 'he came like Themistocles, to claim the hospitality of the British people, and the protection of its laws.' Captain Maitland offered to dispatch General Gourgaud to England with this letter immediately, repeating at the same time to him 'that he was not authorised to stipulate as to the reception of Bonaparte in England, where he must consider himself at the disposal of the Prince Regent.' On the 15th Napoleon left Rochefort and came on board the *Bellerophon* with his suite: as Captain Maitland advanced to meet him on the quarter-deck, Napoleon said to him, 'I come to place myself under the protection of your Prince and your laws.' On the 24th the ship entered Torbay. On the 31st of July Admiral Lord Keith and Sir Henry Bunbury, under secretary of state, came on board the *Bellerophon*, to announce to him the final resolution of the British government,—that the Island of St. Helena should be his future residence. Napoleon protested against this determination, said he was not a prisoner of war, that he had come as a voluntary passenger on board the *Bellerophon*, that he wished to be allowed to remain in England as a private citizen, &c. On the 6th of August however Napoleon frankly acknowledged to Captain Maitland, that 'he had certainly made no conditions on coming on board the *Bellerophon*, that he had only claimed hospitality, and that he had no reason to complain of the Captain's conduct, which had been that of a man of honour.' On the 7th Napoleon removed from the *Bellerophon* to the *Northumberland*, Sir George Cockburn's flag ship, which was appointed to carry him to St. Helena. (For the particulars of Bonaparte's voyage, his landing at St. Helena, his residence, first at Briars and afterwards at Longwood, of his altercations first with Sir G. Cockburn, and afterwards with Sir Hudson Lowe, we must refer our readers to the minute work of Count Las Cases.) He landed at St. Helena on the 16th of October, 1815.

By a convention signed at Paris, 20th August, 1815, between Great Britain, Austria, Russia, and Prussia, the custody of Napoleon's person was intrusted to the British government, and commissioners were appointed by Russia, Austria, and France to reside at St. Helena to look after his safe detention. In July, 1816, General Sir Hudson Lowe arrived at St. Helena as governor of the island. From the very first interview Bonaparte behaved uncivilly, or rather

insultingly, to that officer, and this treatment was repeated with aggravation at every subsequent opportunity. One of Napoleon's great grievances was his being styled General Bonaparte; another, his not being allowed to stroll about the island unattended by a British officer. He was allowed a space measuring eight and afterwards twelve miles in circumference round Longwood, through which he might range at his pleasure; beyond these limits he was to be accompanied by an officer. But the real grievance was that of being detained as a prisoner at all. The governor however had no power to remedy these subjects of complaint. Various minor matters of dispute with the governor were laid hold of by Bonaparte and his attendants, as if with the view of keeping alive an interest in the public mind in favour of the exile of St. Helena. We cannot enter into the particulars of this petty system of warfare, in which, as it generally happens, both parties may have occasionally been in the wrong. But it is impossible to read even Napoleon's statements, made through Las Cases, Santini, Antommarchi, &c., without perceiving that there was a determination on his part not to be pleased with any thing the governor could do for him, unless he had disobeyed his orders. Napoleon's mind was in a state of irritation whenever it recurred to the subject of his confinement, which made him querulous and peevish. He seems also to have had, almost to the last, some latent hope of making his escape. In other respects the particulars of his life and conversations at St. Helena are highly interesting. He could be very agreeable towards visitors who were admitted to pay their respects to him, as we may see from Mr. Ellis's and Captain Hall's accounts of their interviews with him. In September, 1818, Napoleon's health began to be visibly affected, but he would take no medicines. He also refused to ride out, as advised, because he would not submit to the attendance of a British officer. In September, 1819, Dr. Antommarchi, of the University of Pisa, came to St. Helena as physician to Napoleon. Two clergymen came also from Italy to act as his chaplains. Towards the end of 1820 he grew worse, and remained in a weak state until the following April, when the disease assumed an alarming character. It was then that Bonaparte said that he believed it was the same disorder which killed his father, namely a scirrhus in the pylorus; and he desired Dr. Antommarchi to examine his stomach after his death. He made his will, leaving large bequests to his friends and attendants (*Testament de Napoleon*), and on the 3d of May, 1821, the chaplain Vignali administered to him extreme unction. Napoleon stated 'that he believed in God, and was of the religion of his father: that he was born a Catholic, and would fulfil all the duties of the Catholic church.' On the 5th of May, after being some time delirious, he breathed his last about eleven minutes before six o'clock in the evening. The following day the body was opened by Dr. Antommarchi, in presence of several British staff and medical officers, when a large ulcer was found to occupy the greater part of the stomach. On the 8th May his remains were interred with military honours in Slane's Valley, near a fountain overhung by weeping willows. This had been a favourite spot with Napoleon. The procession was followed to the grave by the governor, the admiral, Napoleon's attendants, and all the civil and military authorities. The grave was afterwards enclosed by a railing, and a sentry is kept on duty to guard the spot.

For the acts of Napoleon's internal administration see *Bulletin des Lois de l'Empire* and the *Exposés* of his ministers; for the state of the finances see the various *Comptes rendus*, or report of the duke of Gaeta (Gaudin), and also Bresson, *Histoire Financière de France*; for the military institutions and organization of the army, see *Tableau Politique et Militaire*, which precedes Foy's history of the Peninsular war. Also *Mémoires sur l'Empire*, by Thibaudau, which is a continuation of his 'Memoirs on the Consulate,' the duchess of Abrantes' *Mémoires*, and the numerous Memoirs of Napoleon's generals and ministers.

BONAPARTE, NAPOLEON FRANÇOIS, son of the emperor and of Maria Louisa of Austria, was born at Paris March 20, 1811. From his birth he was styled 'King of Rome.' After his father's first abdication in 1814 he went with his mother to Vienna, where he was brought up at the court of his grandfather, the emperor Francis, who made him duke of Reichstadt. His education was carefully attended to, and he was early trained up to the military profession. After passing through the various subor-

dinate grades he was made a lieutenant-colonel in June, 1831, and he took the command of a battalion of Hungarian infantry then in garrison at Vienna. He was extremely assiduous in his military duties, but his constitution was weak; he had grown very tall and slender, and symptoms of a consumptive habit had early shown themselves. His physician advised a removal to Schönbrunn, which had at first a beneficial effect, but a relapse soon followed, and after lingering for several months young Napoleon died on the 22nd July, 1832, in the palace of Schönbrunn, attended by his mother, who had come from Parma to visit him. He seems to have been generally regretted at the Austrian court, especially by his grandfather, the emperor, who had always behaved to him with paternal kindness. There is an interesting account of this young man's short career by M. de Montbel, *Le Duc de Reichstadt*, Paris, 1832.

BONA'SIA (zoology), a subgenus of the true *Tetraonidae* (grouse family), separated by Charles Lucian Bonaparte, Prince of Musignano, and thus characterized:—

Lower portion of the tarsus or shank and the toes naked; tail long and rounded; the head adorned with a crest, and the sides of the neck with a ruff. The plumage of the female nearly the same as that of the male, and varying but little throughout the year; the flesh white.

Swainson retains the Linnæan name for the bird, and makes *Tetrao* the typical group of the subgenera, into which he divides the genus, expressing, however, considerable doubt on the value of the types.

The *Ruffed Grouse*, *Bonasia Umbellus* of Bonaparte; *Tetrao Umbellus* and *Tetrao togatus* of Linnæus; *Tetrao Umbellus* of Linnæus and Swainson, is the *Shoulder-Knot Grouse* of Latham; the *Ruffed Heathcock* or *Grouse* of Edwards; *La Gelinote Aupée de Pensilvanie* of Brisson; *La Grosse Gélinoite de Canada* and *Le Coq de Bruyère à fraise* of Buffon; the *Pheasant* of the Pennsylvanians, and of the inhabitants of the southern States; the *White Flecker* and *Pheasant* of the Anglo-Americans generally, and the *Puspusquew* of the Cree Indians.

Audubon says that to the west of the Alleghanies, and on those mountains, the term *pheasant* is generally used to designate the bird, and that the same appellation is employed in the middle States to the east of the mountains, till the state of Connecticut is entered, where the name of *partridge* prevails. Lawson uses the term *pheasant*. 'The pheasant of Carolina differs some small matter from the English pheasant, being not so big, and having some difference in feather; yet he is not any wise inferior in delicacy, but is as good meat, or rather finer. He haunts the backwoods, and is seldom found near the inhabitants.' Wilson calls it throughout 'pheasant,' except in one place, where he terms it the 'pheasant or partridge of New England.'

According to the author last quoted, this bird is known in almost every quarter of the United States; is common at Moose Fort, on Hudson's Bay, in lat. 51°; frequent in the upper part of Georgia, and very abundant in Kentucky and Indiana. In the lower parts of Carolina, Georgia, and Florida, according to the same authority, it is very seldom observed, but on advancing inland to the mountains it again makes its appearance; and though it is occasionally met with in the lower parts of New Jersey, its occurrence there is considered to be owing to the more northerly situation of the country; for even here they are far less numerous than among the mountains.

Captains Lewis and Clarke found it in crossing the Rocky Mountains which divide the basin of the Columbia from that of the Mississippi, more than three thousand miles, by their measurement, from the mouth of the latter river. Dr. Richardson says that it exists as far north as the fifty-sixth parallel, and that it is very plentiful on the banks of the Saskatchewan; adding, in a note, that Mr. Drummond procured specimens on the sources of the Peace River, in the valleys of the Rocky Mountains, which do not differ from those killed on the Saskatchewan. The limit of its southern range has been stated to be the Gulf of Mexico. Audubon found these birds most numerous in the States of Pennsylvania and New York, and says that they are to be met with as you travel towards the south, through the whole of Tennessee and the Choctaw territory; but that as you approach the city of Natchez they disappear; nor had he ever heard of one of these birds having been seen in the State of Louisiana.

'The manners of the pheasant, says Wilson, 'are soli-

tary; they are seldom found in coveys of more than four or five together, and more usually in pairs or singly. They leave their sequestered haunts in the woods early in the morning, and seek the path or road to pick up gravel, and glean among the droppings of the horses. In travelling among the mountains that bound Susquehanna, I was always able to furnish myself with an abundant supply of these birds every morning without leaving the path. If the weather be foggy or lowering, they are sure to be seen in such situations. They generally move along with great staidness, with their broad fan-like tail spread out.'

Audubon states that, although they are attached to the craggy sides of mountains and hills, and rocky borders of small streams, thickly mantled with evergreen trees and shrubs, they at times remove to the lowlands, and even enter the thickest cane-brakes, where they sometimes breed, and where he shot some, and heard them drumming when there were no hills nearer than fifteen or twenty miles. The lower parts of the State of Indiana, and also those of Kentucky, were amongst the places where he so discovered them. The following is his account of their autumnal migrations, which he seems to have first observed:—

'The ruffed grouse, although a constant resident in the districts which it frequents, performs partial sorties at the approach of autumn. These are not equal in extent to the peregrinations of the wild turkey, our little partridge, or the pinnated grouse, but are sufficiently so to become observable during the seasons when certain portions of the mountainous districts which they inhabit become less abundantly supplied with food than others. These partial movements might not be noticed, were not the birds obliged to fly across rivers of great breadth, as whilst in the mountain lands their groups are as numerous as those which attempt these migrations; but on the north-west banks of the Ohio and Susquehanna rivers, no one who pays the least attention to the manners and habits of our birds can fail to observe them. The grouse approach the banks of the Ohio in parties of eight or ten, now and then of twelve or fifteen, and, on arriving there, linger in the woods close by for a week or a fortnight, as if fearful of encountering the danger to be incurred in crossing the stream. This usually happens in the beginning of October, when these birds are in the very best order for the table, and at this period great numbers of them are killed. If started from the ground, with or without the assistance of a dog, they immediately alight on the nearest trees and are easily shot. At length, however, they resolve upon crossing the river; and this they accomplish with so much ease, that I never saw any of them drop into the water. Not more than two or three days elapse, after they have reached the opposite shore, when they at once proceed to the interior of the forests in search of places congenial to the general character of their habits. They now resume their ordinary manner of living, which they continue until the approach of spring, when the males, as if leading the way, proceed singly towards the country from which they had retreated. The females follow in small parties of three or four. In the month of October, 1820, I observed a larger number of ruffed grouse migrating thus from the States of Ohio, Illinois, and Indiana into Kentucky, than I had ever before remarked. During the short period of their lingering along the north-west shore of the Ohio that season, a great number of them was killed, and they were sold in the Cincinnati market for so small a sum as 12½ cents each.'

Wilson says that the ruffed grouse is in the best order for the table in September and October. At this season they feed chiefly on whortle-berries, and the little red aromatic partridge-berries, the last of which give their flesh a peculiarly delicate flavour. With the former the mountains are literally covered from August to November; and these constitute at that season the greater part of their food. During the deep snows of winter they have recourse to the buds of alder, and the tender buds of the laurel.* He frequently found their crops distended with a large handful of these latter alone; and adds, that it has been confidently asserted, that after having fed for some time on the laurel buds, their flesh becomes highly dangerous to eat of, partaking of the poisonous qualities of the plant. The same has been asserted of the flesh of the deer, when in severe weather and deep snows they subsist on the leaves and bark of the laurel. 'Though,' continues Wilson, 'I have myself eat freely of the flesh of the pheasant, after emptying it of

* Kalmia.

large quantities of laurel buds, without experiencing any bad consequences, yet from the respectability of those, some of them eminent physicians, who have particularized cases in which it has proved deleterious, and even fatal, I am inclined to believe that in certain cases where this kind of food has been long continued, and the birds allowed to remain undrawn for several days, until the contents of the crop and stomach have had time to diffuse themselves through the flesh, as is too often the case, it may be unwholesome and dangerous. Great numbers of these birds are brought to our markets at all times during fall and winter, some of which are brought from a distance of more than a hundred miles, and have been probably dead a week or two, unpicked and undrawn, before they are purchased for the table. Regulations prohibiting them from being brought to market unless picked and drawn would very probably be a sufficient security from all danger. At these inclement seasons, however, they are generally lean and dry, and indeed at all times their flesh is far inferior to that of the quail or of the pinnated grouse. They are usually sold in Philadelphia market at from three-quarters of a dollar to a dollar and a quarter a pair, and sometimes higher.

Most of our readers will remember the incident in Miss Edgeworth's admirable story of 'To-morrow,' where it is related that, in consequence of Basil's procrastination, Mr. Hudson and three gentlemen who had been dining with him were suddenly seized with convulsions after eating of a pheasant, in whose crop Basil had seen what he believed to be, and what turned out to be, the leaves of *Kalmia latifolia*. Audubon, however, corroborates Wilson on this point; for, though he allows that it is said that when they have fed for several weeks on the leaves of the *Kalmia latifolia* it is dangerous to eat their flesh, and adds his belief that laws have been passed to prevent their being sold at that season, he states that he has eaten them at all seasons; and, when he has found their crops distended with those leaves, he has never felt the least inconvenience after eating them, nor even perceived any difference of flavour in their flesh. He suspects with Wilson that it is only when the birds have been kept a long time undrawn and unpicked that the flesh becomes impregnated with the juice of these leaves. But Audubon entirely differs from Wilson in opinion with regard to the merit of these birds as food; for the former places them, in that respect, above the pinnated grouse, and prefers their flesh to that of every other land-bird in the United States, except the wild turkey when in condition. Nuttall agrees with Audubon in the praise of the flavour of the bird; and Bonaparte says of it, 'Carne bianca eccellente.' Audubon observes that they are brought to the market in great numbers during the winter months, and sell at from 75 cents to a dollar a piece in the eastern cities. At Pittsburg he bought them some years ago at 12½ cents the pair. Nuttall says that they are now greatly thinned throughout the more populous parts of the Union, and that they sell in Philadelphia and New York at from 75 cents to a dollar a-piece.

The food of the ruffed grouse consists commonly in the spring and fall, according to the author last quoted, of the buds of trees, the catkins of the hazel and alder, even fern buds, acorns, and seeds of various kinds, among which he detected the capsules, including the seeds, of the common small Canadian *Cistus*.* At times he has seen the crop almost entirely filled with the buds of the apple-tree, each connected with a portion of the twig, the wood of which appears to remain a good while undigested; cinquefoil and strawberry leaves, buds of the Azaleas and of the broad-leaved *Kalmia*, with the favorite partridge berries,† ivy berries,‡ and gravel pebbles are also some of the many articles which form the winter fare of the bird. In summer they seem often to prefer berries of various kinds, particularly dewberries, strawberries, grapes, and whortleberries.

We will now lay before the reader the modes of capturing the bird. The following is Wilson's account:—

'The pheasant generally springs within a few yards, with a loud whirring noise, and flies with great vigour through the woods beyond reach of view, before it alights. With a good dog, however, they are easily found; and at some times exhibit a singular degree of insatiation, by looking down from the branches where they sit on the dog below, who, the more noise he keeps up, seems the more to confuse and stupefy them, so that they may be shot down one by one

till the whole are killed, without attempting to fly off. In such cases those on the lower limbs must be taken first, for should the upper ones be first killed, in their fall they alarm those below, who immediately fly off. In deep snows they are usually taken in traps, commonly dead traps, supported by a figure 4 trigger. At this season, when suddenly alarmed, they frequently dive into the snow, particularly when it is newly fallen, and coming out at a considerable distance, again take wing. They are pretty hard to kill, and will often carry off a large load to the distance of two hundred yards and drop down dead. Sometimes in the depth of winter they approach the farm-house and lurk near the barn, or about the garden. They have also been often taken young and tamed, so as to associate with fowls; and their eggs have frequently been hatched under the common hen; but these rarely survive until full grown. They are exceedingly fond of the seeds of grapes; occasionally eat ants, chestnuts, blackberries, and various vegetables. Formerly they were numerous in the immediate vicinity of Philadelphia; but as the woods were cleared and population increased they retreated to the interior. At present (1812) there are very few to be found within several miles of the city, and those only singly, in the most solitary and retired woody recesses.'

Some parts of this account are impugned by Audubon. He says, 'The prevailing notion which exists in almost every district where these birds are numerous, that on firing at the lowest bird perched on a tree, the next above will not fly, and that by continuing to shoot at the lowest in succession the whole may be killed, is contradicted by my experience; for on every attempt which I have made to shoot several in this manner on the same tree, my efforts have proved unsuccessful, unless indeed during a fall of snow, when I have killed three and sometimes four.' Audubon adds that it is a prevalent opinion among sportsmen and naturalists, that the whirring sound produced by the birds of this genus is a necessary effect of their usual mode of flight. 'But that this is an error,' he continues, 'I have abundantly satisfied myself by numberless observations. When this bird rises from the ground when pursued by an enemy or tracked by a dog, it produces a loud whirring sound resembling that of the whole tribe, excepting the *Black Cock** of Europe, which has less of it than any other species. In fact, I do not believe that it is emitted by any species of grouse, unless when surprised and forced to rise. I have often been lying on the ground, in the woods or the fields, for hours at a time, for the express purpose of observing the movements and habits of different birds, and have frequently seen a partridge or a grouse rise on the wing from within a few yards of the spot on which I lay unobserved by them, as gently and softly as any other bird, and without producing any whirring sound.' The same author speaks of the difficulty of shooting when a covey of these birds is raised from amongst laurels,† or the largest species of bay,‡ and of the necessity for having a quick eye and ready hand, without which the first chance is lost by the intercepting shrubs. The second is very uncertain; for on being sprung a second time they fly lower and dodge among the bushes so effectually that the sportsman is completely baffled.

The pairing time of these birds is marked by a curious and sonorous act on the part of the male. Most of the grouse family gesticulate considerably at this period, and some produce very peculiar vocal noises: but the ruffed grouse makes the woods echo with the vibrations of his wings. The reader will be best made acquainted with this peculiarity by the statement of eye and ear witnesses. Wilson's account is very good; but, as Audubon's is more particular, and our limits do not permit us to give both, we select the latter:—

'Early in April,' says this indefatigable observer, 'the ruffed grouse begins to drum immediately after dawn, and again towards the close of day. As the season advances, the drumming is repeated more frequently at all hours of the day; and where these birds are abundant, this curious sound is heard from all parts of the woods in which they reside. The drumming is performed in the following manner:—The male bird, standing erect on a prostrate de-

* In the article 'Black-cock,' Dartmoor and Sedgemoor in Devonshire are given among the localities (vol. iv. p. 482). The expression occurs in both editions of Montagu (who resided in Devonshire) and in Selby; but there can be little doubt that Sedgemoor in Somersetshire, where the Duke of Monmouth was defeated, is the locality intended.

* *Helianthemum*. † *Gaultheria procumbens*. ‡ *Cistus hederaceus*.

† *Kalmia latifolia*.

‡ *Rhododendron maximum*.

cayed trunk, raises the feathers of its body, in the manner of a turkey-cock, draws its head towards its tail, erecting the feathers of the latter at the same time, and raising its ruff around the neck, suffers its wings to droop and struts about on the log. A few moments elapse, when the bird draws the whole of its feathers close to its body, and stretching itself out, beats its sides with its wings, in the manner of the domestic cock, but more loudly, and with such rapidity of motion, after a few of the first strokes, as to cause a tremor in the air not unlike the rumbling of distant thunder. In perfectly calm weather, it may be heard at the distance of two hundred yards, but might be supposed to proceed from a much greater distance. The female, which never drums, flies directly to the place where the male is thus engaged, and on approaching him, opens her wings before him, balances her body to the right and left, and then receives his caresses.' * * * 'I have shot many a fine cock by imitating the sound of its own wings striking against the body, which I did by beating a large inflated bullock's bladder with a stick, keeping up as much as possible the same *time* as that in which the bird beats. At the sound produced by the bladder and the stick, the male grouse, inflamed with jealousy, has flown directly towards me, when, being prepared, I have easily shot it.'

The pairing time in April is succeeded by the nidification in the early part of May. The root of a bush, the side of a fallen log, or some other sheltered nook in the thickest part of the woods, is selected by the hen, and there she forms a rude nest of withered leaves and grass on the ground. The eggs, from nine to fifteen in number, are of a uniform dull yellowish colour, or brownish-white, and are nearly as large as those of a pullet. As soon as the young are out of the shell they begin to run about, and are conducted by the mother, clucking as she goes, very much like the domestic hen. Like her, too, at night and in bad weather, she covers her young ones beneath her wings, and in a week or ten days they begin to try their powers of flight.

The manœuvres of this affectionate mother to decoy the intruder from the spot where her young are concealed, by counterfeiting lameness and by mimicry of distress, are well known; but Wilson gives a particular instance of deviation from the usual course of proceeding in such cases, adapted to a peculiar occasion, well worth the consideration of those who are in the habit of considering that faculty which is termed instinct in animals.

'I once started,' says Wilson, 'a hen pheasant with a single young one, seemingly only a few days old; there might have been more, but I observed only this one. The mother fluttered before me for a moment; but suddenly darting towards the young one, seized it in her bill, and flew off along the surface through the woods, with great steadiness and rapidity, till she was beyond my sight, leaving me in great surprise at the incident. I made a very close and active search around the spot for the rest, but without success.' * * * 'Here,' continues our author, 'was a striking instance of something more than what is termed blind instinct, in this remarkable deviation from her usual manœuvres when she has a numerous brood. It would have been impossible for me to have injured this affectionate mother, who had exhibited such an example of presence of mind, reason, and sound judgment, as must have convinced the most bigoted advocates of mere instinct. To carry off a whole brood in this manner would be impossible, and to attempt to save one at the expense of the rest would be unnatural. She, therefore, usually takes the only possible mode of saving them in that case, by decoying the person in pursuit of herself, by such a natural imitation of lameness as to impose on most people. But here in the case of a single solitary young one, she instantly altered her plan, and adopted the most simple and effectual means for its preservation.'

The ruffed grouse is surrounded by enemies. In addition to the common persecutor man, the different species of hawks are on the watch for these birds, and particularly the red-tailed hawk and the Stanley hawk, according to Audubon. The former of these hawks, silently perched on the tops of trees, seizes his opportunity and dashes irresistibly down upon them; the latter, gliding rapidly through the woods, pounces upon them before they are aware of their danger. Among the quadrupeds, pole-cats, weasels, raccoons, opossums, and foxes, are said by the same author to be destructive foes to them.

The following is Dr. Richardson's description of a male killed on the 4th May, on the Saskatchewan plains:

Colour. Back, rump, and upper tail-coverts chestnut-brown, mottled and finely undulated with blackish-brown; the broad tips and a cordiform central mark on each feather pale-grey. Back of the neck, scapulars, and wing-coverts having the same colours, but the grey tips very narrow, the blackish-brown in large blotches, and instead of central marks, stripes along the shafts of orange-brown and brownish-white. Top and sides of the head, the tertiaries, and outer edges of the secondaries, mottled with the same. Eye stripe from the nostrils whitish. Shoulder-tufts velvet-black, glossed with dark-green. Quills liver-brown, the outer webs barred near the base and mottled towards the tips with cream-yellow. Tail grey, finely undulated, and also crossed by about nine narrow bars and a broad subterminal one of blackish-brown. *Under plumage:*—throat and breast yellowish-brown, belly and vent brownish-white; are remotely barred, but most broadly on the sides of the belly, with blackish-brown, which also forms a band across the upper part of the breast between the ruffs. Inner wing-coverts and axillaries clove-brown, barred and tipped with white. Bill and nails dark horn-colour. A male killed at the same time with the preceding, and of equal dimensions, shows more of the chestnut or orange-brown in its plumage, and the ground colour of its tail is yellowish-brown, the extreme tips and a bar next the broad subterminal dark one being grey.

Females have less of the blackish-brown colour; the shoulder tufts are orange-brown instead of black; and the subterminal bar on the tail is chestnut-coloured.

Young birds. In these orange-brown is the prevailing tint of colour.

Form.—A short crest on the top of the head: a fringed comb over the eye in the male. Shoulder tufts consisting of about fifteen fan-shaped feathers. Fourth quill the longest, slightly exceeding the third and fifth. Tail fan-shaped, of eighteen feathers, the central pair more than half an inch longer than the outer ones: the individual feathers nearly square at the end. Tarsus feathered more than halfway down anteriorly, and about half an inch lower posteriorly. All the toes strongly pectinated.

The dimensions, on an average, may be taken as eighteen inches in length, and twenty-three or twenty-four in extent.



[Bonasia Umbellus, male.]

Dr. Richardson states that, after a careful comparison of the specimens of Mr. Douglas's *Tetrao Sabini*, deposited in the Edinburgh Museum, they appeared to differ in no respect from the young of *Tetrao Umbellus* (Bonasia), and that the characters by which Mr. Douglas distinguishes his bird* are equally applicable to the latter.

Douglas, whose premature and violent death we have to deplore in common with all who are interested in the progress of natural history, found in the valleys of the Rocky Mountains, 54° N. lat., and a few miles northward, near the sources of Peace River, a supposed variety of *Bonasia Umbellus*. On comparing his specimens from that country with some which he prepared in the States of New York and Pennsylvania, and on the shores on the chain of lakes in Upper Canada, he found the following differences:—First, the northern bird was constantly one-third smaller, of a very light speckled mixed grey, having little of that rusty colour so conspicuous in the southern bird:—secondly, the ruffle consists invariably of only twenty feathers, short, black, and with but little azure glossiness; the crest feathers were few and short. 'Should these characters,' adds the author, 'hereafter be considered of sufficient importance for constituting a distinct species, it might perhaps be well to call it *Tetrao umbelloides*.'

Whether the bird above described be variety or species, it would certainly belong to Bonaparte's subgenus *Bonasia*.

We cannot conclude this article without earnestly pressing upon the consideration of those who are interested in such subjects, the ease with which the ruffed grouse might be added to the Fauna of Europe; and we entirely agree with Audubon, that in England and Scotland there are thousands of situations perfectly suited to the habits of this noble species of game. Audubon even goes so far as to say that he has not a doubt that a few years of attention would be sufficient to render them quite as common as the grey partridge; and we hope that this hint will not be lost on the sportsmen of Great Britain.

BONASONI, GIULIO, a native of Bologna. The precise date of his birth is unknown, but it was probably about 1498; the date of his death is equally uncertain; we only know that he was alive in 1572. It is conjectured, but without sufficient authority, that he studied painting under Lorenzo Sabbatini. The few of his productions that remain do not exhibit any extraordinary power. As an engraver he is excelled by few, for though we should now consider him very defective in the mechanical treatment of the plate, he worked with the gusto of a genuine artist. He wrought almost entirely with the burin; and if he fails occasionally in the outline, he always catches the spirit of his original. His copies are so free, and yet so delicate and expressive, that they might be taken for original designs. His back grounds are flat and hard, his drawing sometimes uncertain, and his handling frequently very harsh; but there is so much grace and delicacy in his females and children—so much activity in his young men and majesty in the elder—so fine a breadth of light and shade—so forcible is the expression of his heads,—that his versions of the great works which he copied are more valuable than those of many later and more dexterous artists. He has engraved from the works of Raphael, Michel Angelo, Titian, Parmigiano, and many of the great painters; for he displayed his taste as much in the choice of his subjects as in the execution. He has left many engravings from original designs which are characterized by much grace and agreeable simplicity, but are wanting in force, and rather scattered in the grouping. Many of his works are very scarce. (Malvasia; Lanzi; Strutt; Cumberland.)

BONASSUS. [Bison.]

BONAVENTURA, ST., was born at Bagnorea in 1221. At twenty-one years of age he became a friar of the Order of St. Francis, and was sent by his superiors to Paris. He, as well as Thomas Aquinas, of the Dominican Order, became involved in contentions with the University of Paris, which denied the academical honours, as well as the exercise of public professorship, to individuals of the mendicant orders. Pope Alexander IV., being appealed to, summoned the parties before him at Anagni. The mendicant orders chose Bonaventura and Albertus Magnus to plead their

cause. The pope gave sentence in their favour but still the Parisian university refused to grant the laurea to Bonaventura and Thomas Aquinas, and Gerard Abbeville wrote in an abusive strain against the mendicant orders. Bonaventura replied to him powerfully, though temperately, in his 'Apologia Pauperum.' At last, in 1257, a sort of compromise took place, and Bonaventura received his doctor's degree. He had already been elected general of his order, in which capacity he enforced a strict discipline, giving himself the first example of implicit adherence to the monastic rules and regulations. He wrote upon this subject 'Epistola encyclica ad Ministros Provinciales et Custodes,' and 'Determinaciones Questionum circa Regulari Sancti Francisci.' He then retired to the convent on Mount Alvernia in Tuscany, where he wrote 'Vita Sancti Francisci,' and also an ascetic work, 'Itinerarium Mentis in Deum,' for which last he received the appellation of the 'Seraphic Doctor.' On the death of Pope Clement IV. in 1268, the cardinals could not agree for a long time in the choice of his successor, and the see of Rome had remained vacant for nearly three years, when Bonaventura succeeded by his eloquent exhortations in reconciling their differences and producing unanimity of votes in favour of Tedaldus Visconti, afterwards Gregory X. The new pope appointed Bonaventura Bishop of Albano, and took him with him to the council of Lyons. Bonaventura was actively engaged in the labours of the council when he was stopped by death in 1274. His funeral was attended by the pope, the cardinals, the patriarchs of Constantinople and of Antioch, and by more than 500 bishops. His character for sanctity was already established in the popular opinion, and Dante, who wrote not many years after his death, places him among the saints in canto 12 of the 'Paradiso.' Bonaventura was afterwards regularly canonized by the church. His works have been collected in 9 vols. folio, Rome, 1588, and 13 vols. 4to. Venice, 1751, to which last edition a well-written life of Bonaventura is prefixed. He has been praised for having avoided scholastic cavils and ambiguities in his style, and for having spoken the language of earnest faith and sincere piety: such is the opinion of Brucker and of Condillac. Luther placed Bonaventura above all scholastic theologians. Several works have been attributed to Bonaventura which do not belong to him, but which have furnished an opportunity to Voltaire and other critics for throwing ridicule upon the supposed author. (*Dissertatio De Suppositis and Life of Bonaventura*, prefixed to the Venice edition of his works.)

BONAVISTA, or **BOAVISTA**, the most easterly and one of the largest of the Cape Verde Islands, lies 21 miles S. of Sal, and 300 miles W. by N. of Cape Verde, the nearest point of the African coast. It was so called from the beautiful appearance it presented to the first discoverers (the Portuguese) in 1450, and, from all accounts, was formerly more fertile than it now is. The island is generally a low plain, with some elevated parts near the centre. Salt is the principal article of trade, which the inhabitants exchange for clothing and necessaries. Pigs, goats, sheep, and poultry may also be had, but they are all lean, and of an inferior quality. The town is on the western side of the island, and consists only of about forty or fifty houses, mostly built by negroes, and rudely constructed. The population of the island in 1822 was estimated at about 3000, of whom 300 are regular soldiers. The colour of the inhabitants is of all the intermediate shades from white to negro jet, owing to intermarriage.

Bonavista is of an irregular shape, nearly octagonal, sixteen miles in length, N. and S., and the same in breadth: it is surrounded by many rocks and shoals. There are two anchorages, one off the town, called English Road, and the other off the S.E. point, called Portuguese Road; of these the former is the more secure, and is perfectly safe in the summer months when the N.E. trade blows constantly. Sixteen miles to the S.W. is a very dangerous rock called the Leton Rock, about a mile in extent, nearly level with the water's edge, and with deep water round it. The town lies in 16° 9' N. lat., and 22° 57' W. long.

(*North Atlantic Memoir, &c.*)

BOND. A bond or obligation, in law, is a deed by which he who makes it, called the *obligor*, binds himself to another called the *obligee*, to pay a sum of money, or to do, or not to do, any other act. It is, in fact, a species of covenant. [COVENANT.]

Bonds for the payment of money are the most common.

* Linn. Trans. vol. xvi. p. 137. But it should be remembered that Douglas describes the eggs of his *Tetrao Sabini* to be dirty white with red spots; whereas the eggs of *Bonasia Umbellus* are described as being spotless. The reader should however be aware that the eggs of different individuals of the same species often vary considerably in their markings.

They are employed instead of promises by word, or by unsealed writing, for the following reasons. First, a bond (like every covenant) to pay a sum of money may be enforced against the obligor, although no legal motive or consideration existed for making it (which is not the case with a verbal promise or a promissory note for its payment), for a deed cannot be set aside by the maker of it, though gratuitous. Hence, voluntary engagements which are intended to be binding in law should be made by bond or covenant. Secondly, though the sum of money which a person is to oblige himself to pay is a debt already existing, or though any legal consideration for its payment exists, so that a promise by word or by unsealed writing to pay it would be binding in law, yet a bond is a better security; for if the debtor dies before the debt, though due, is paid, the creditor being, by virtue of the bond, among those who are called creditors by *specialty*, will be entitled to be satisfied out of the personal and real assets [Assets] of the deceased before creditors by *simple contract* (among whom, if he had only the verbal promise or promissory note of his debtor, he would be reckoned) receive any part of the debts due to them. (2 Bl. Com. 340. 511. Stat. 1 W. IV. c. 47. 3 and 4 W. IV. c. 104.) In order, however, that a bond debt may be thus payable out of the *real* assets of the debtor (his lands of which he died seized) before his simple contract debts, the debtor must, by the bond, have expressly bound himself *and his heirs* to pay the debt.

Another advantage which a bond has over a bill of exchange or promissory note is that an action may be brought upon it at any time within twenty years after it is due (Stat. 3 and 4 W. IV. c. 42, s. 3); whereas a simple contract debt is barred by the statute of limitations after *six* years. [LIMITATION.]

A bond, though thus a better security in many respects than a promissory note or bill of exchange, is inferior to them in one particular; for it cannot be *assigned* in law, so as to give the assignee the right of suing, in his own name, the obligor for the debt. (2 Bl. Com. 442.) The courts of equity, however, support, as far as they can, assignments of bonds to purchasers, and acknowledge and enforce the right of such assignees to receive the bond debts out of the assets of the debtors.

A bond is so good a security for the payment of a sum of money, that it is often employed not only when a *debt* is to be established, but when a pecuniary *penalty* is to be provided. When a man is required to oblige himself to do or not to do any act, he often enters into a bond for payment of a certain sum of money, as a penalty, in case he departs from his agreement. A bond of this kind, which is called a *penal* bond, is always prepared as follows. It is a simple bond for payment of the penal sum, no time or event being mentioned when that shall be due: but a *condition* is added for making the bond void, in case the obligor performs his duty; the nature of such duty being expressed in the condition. This may seem not to be the most accurate mode of securing a contingent penalty; but, construed by law, such a bond answers its purpose. For though, generally, when a bond for payment of a sum of money mentions no time of payment, an action may be brought upon it immediately; yet in this case the penal sum is not considered to be due or recoverable till the condition annexed to the bond fails of effect by the obligor neglecting or departing from his duty. These penal bonds are further rendered equitable in their operation by the liberal construction which the law puts upon the conditions annexed to them; often holding that such conditions take effect, and that their terms have been sufficiently observed, when, according to a more rigid construction, the penalties would have been forfeited; and often restraining obligees from taking advantage of the failure of such conditions, when they ought not, in justice, to receive the penalties. Even when the obligee in a penal bond is allowed to recover the penalty, he cannot, generally, take any more of it than what is a reasonable compensation for the damage sustained by him; and the amount of such compensation will be ascertained by the verdict of a jury. (Stat. 8 and 9 W. III. c. 11.)

The obligor in a penal bond being thus protected, it may seem that equal relief should be given to the obligee, when the penalty is not, as usual, greater than the amount of damage sustained by him, but less. However, it is a general rule, that the obligee cannot recover upon his bond any pecuniary compensation beyond the penal sum expressly

secured. But the Courts of Equity consider the condition of every penal bond to be evidence of an *agreement* on the part of the obligor to perform the duty whose performance is to relieve him from the penalty. Thus a condition for making a bond void in case the obligor does or does not do any act, shows, in contemplation of equity, an agreement by him to do or not to do such act; and this agreement will, in many cases, be enforced against him, at the suit of the obligee, by a decree for specific performance of the agreement, or by an injunction against its breach; and thus, even where the penalty in a bond is insufficient, the obligee is not always without remedy.

The courts of Law do not consider that an implied *covenant* is created by the condition of a bond, so as to allow the obligee to bring an action upon it; but they, as well as those of equity, so far take the condition to be evidence of a contract upon which the bond is founded, as to hold the bond to be void, if the condition is unlawful. For though, as before said, a bond without consideration may be valid, yet a bond made for an unlawful consideration, or upon an unlawful contract, is void, like every other deed so circumstanced.

Penal bonds have almost superseded, in general use, bonds without condition, or *single* bonds. Even when a bond is intended to secure the payment of money, the constant practice is to make it in the form of a bond for payment of a penal sum, double the principal sum which is really to be paid, with a condition, making the bond defensible upon the latter sum being duly paid with interest. The chief advantage of such a bond over a single bond was, not that any more money than was fairly due to the obligee could or can be recovered under it (for the stat. 4 and 5 Ann. c. 16, forbids that), but that full interest, up to the day on which the debt was satisfied, might be obtained, if within the penalty; whereas, under a single bond for payment of the principal and interest at a certain day, no interest beyond that day could be claimed. That defect of the single bond, however, is supplied by stat. 3 and 4 W. IV., c. 42, s. 28.

A bond is sometimes made by or to several persons together. In such case, the bond may have different effects, according as it is prepared, as either a joint bond, a several bond, or a joint and several bond. This distinction applies equally to covenants, and is noticed under that title. [COVENANT.]

The several modes in which a bond may be *discharged* (when not actually satisfied) may also be learned by referring to the same title; where the principal rules relating to the discharge of covenants, which equally apply to bonds, are mentioned.

BONE, a living organ of complex structure, forming in the higher animals the basis of the fabric of the body. The creatures placed at the bottom of the animal scale, composed of soft gelatinous matter and buoyant in water, need no solid support; but all animals that possess solid organs, and whose body rests upon particular points, must have some substance of a dense and inflexible nature to afford to those various tissues and structures the requisite resistance and support. Throughout the animal kingdom the substances that serve this purpose are the salts of lime, sometimes the carbonate, sometimes the phosphate, and at other times both combined in different proportions. When in the composition of the solid support of the body the carbonate of lime predominates, it constitutes the substance called shell; when there is a greater proportion of the phosphate it is called a crust, as in the coverings of the lobster, the crab, and so on; but when the earthy matter consists almost wholly of the phosphate it constitutes bone.

When an animal possesses bone as the solid support of its fabric, it indicates a high degree in the scale of organization. Bone is an elaborate structure found in no class below the vertebrata. Even the lowest order of this, which is the highest class of animals, is wholly destitute of it; for it is not found in large tribes of fishes, the shark, the sturgeon, the ray, &c. In these, the less highly organized substance called cartilage is substituted, and accordingly these fishes are called cartilaginous, in contradistinction to the osseous; and in all classes below the cartilaginous fishes, the dense and inflexible substance which sustains the soft parts of the body, and which affords points of resistance for the action of those parts, consists either of shell or crust, or of some modification of these inorganic matters, and not of true organized bone.

In general the inorganic matter which performs the office of bone in the lower animals is placed on the exterior of the body, and often indeed forms its external envelope; true bone, on the contrary, is always placed in the interior. Even when it approaches the surface, bone is always covered by some soft part, as muscle, membrane, skin, &c. Crust, shell, horn, the substances which form the skeleton of the inferior animals, are thus external, the soft parts being internal; but in the higher animals the skeleton is always internal, and the soft parts, which are sustained by it, and which re-act upon it, are external.

The office of bone in the animal economy is chiefly mechanical, and the mechanical purposes to which it is subservient require that it should be of different sizes and forms. In the human skeleton there are commonly enumerated 260 different bones, which present every variety of size and figure. But all these varieties may be reduced to three classes: the long and round, as the bones of the upper and lower extremities: the broad and flat, as the bones of the skull; or the short and square, as the separate bones that compose the vertebral column. The long bones are adapted for motion, the flat for protection, and the square for motion combined with strength. Accordingly the long bones, which are adapted to communicate a free range of motion, are moulded into lengthened cylinders, and form so many levers, constituting organs of locomotion, exquisitely constructed and combined for the accomplishment of their office, as is seen in the fin of the fish, in the wing of the bird, and in the limb of the quadruped. In the employment of the flat bones for the covering of some of the more tender and delicate organs, as the brain and spinal cord, the form of these bones is such as to add to their strength, as is manifest in the vaulted roof of the skull; while in the construction of the vertebral column, composed of the short and square bones, which are so adjusted as to afford a limited range of motion with a great degree of strength, so many and such opposite purposes are effected, by means so simple yet so efficient, that no fabric constructed by human ingenuity approaches the perfection of this admirable piece of mechanism.

The structure, disposition, and connexion of the individual bones accomplish in the most perfect manner the following mechanical uses:—1. By their hardness and firmness they afford a support to the soft parts, forming pillars to which the more delicate and flexible organs are attached, and kept in their relative positions. 2. By the same properties of hardness and firmness they defend the soft and tender organs, by forming solid and strong cases in which such organs are lodged and protected, as the case formed by the bones of the cranium for the lodgment and protection of the brain; by the bones of the vertebral column for the lodgment and protection of the spinal cord; and by the bones of the thorax, for the lodgment and protection of the lungs, the heart, and the great vessels connected with it. 3. By affording fixed points for the action of the muscles, and by assisting in the formation of joints, they aid and are indeed indispensable adjuncts to the muscles in accomplishing the function of locomotion.

Bone is a complex organ, and the arrangement and combination of its constituent parts are highly curious. It is composed essentially of two distinct substances, an animal and an earthy matter. The animal matter is analogous, both in its nature and in its arrangement, to cellular membrane; the earthy matter consists of phosphoric acid combined with lime, forming phosphate of lime. The cellular membrane is aggregated into plates or laminae, superimposed one upon another, leaving between them interspaces or cells, in which is deposited the earthy matter, phosphate of lime.

This structure of bone is rendered manifest by subjecting it to certain chemical processes. If a bone be placed in a charcoal fire, and the heat be gradually raised to whiteness, it appears, on cooling, as white as chalk; it is extremely brittle; it has lost very much of its weight, yet its bulk and shape are little changed. In this case the membranous matter is wholly consumed by the fire, while the earth is left unaltered. Over the surface of a bone so treated are visible a number of minute crevices, the spaces which were filled, in the natural state of the bone, with the animal matter; and on breaking the bone across, the size and shape of the cavities which contained the marrow become manifest. If, on the other hand, the same bone be placed in an acid sufficiently diluted to prevent its injuring

the animal membrane, and yet strong enough to dissolve the phosphate of lime,—if for this purpose it be macerated in diluted nitric or muriatic acid,—every particle of the phosphate of lime may be removed, and the animal matter alone will remain perfectly uninjured and unaltered. Accordingly, the remaining substance retains the exact figure and dimensions of the original bone, but it has lost all its other mechanical properties. It is so soft and flexible, that if either of the long bones of the human arm, that for example called the radius, be treated in this manner, it can with the utmost ease be tied in a knot. By the first process the earth is obtained, deprived of its animal constituent; by the second, the membranous matter free from the earth. In the bone both are combined; in every constituent atom of it there is an earthy in intimate combination with an animal matter. The first gives it hardness; the second tenacity; and thus by the intimate combination of these elements two qualities, which in unorganized matter are scarcely compatible, are combined. By increasing the proportion of phosphate of lime any degree of hardness can be obtained: the bony portions of the ear, the bony portions of the teeth, for example, are as hard as marble, or even flint; but substances so hard would not do for the ordinary purposes of bone, because they would be brittle in proportion to their hardness, and would be productive of fatal mischief whenever they were subject to any sudden and violent concussion. But all evils of this kind are effectually guarded against by the elastic matter which is the basis of the structure, and not only acts as a strong cement interposed between the calcareous particles, but, by the increase of its relative proportion, is capable of modifying the rigidity of the earthy matter to any extent.

Bones not only differ so much from one another in their comparative hardness, according to the office which each has to serve, that no two bones possess the same degree of rigidity, but no bone is equally hard in its entire substance. When a section of a bone is made in such a manner as to show its structure throughout, it is seen to consist of two varieties, a hard or compact, and an alveolar or spongy substance. In general the compact forms the external and the spongy the internal portion of the bone: the compact part of the bone forms a completely solid body, exhibiting scarcely any visible arrangement, without apparent fibres and laminae; but towards the inner part of the bone the substance becomes less and less dense, until at length it presents the appearance of minute and delicate fibres, which intersect each other in every direction, forming the cells termed cancelli (lattice-work). The transition from the compact to the spongy or cancellated part is not marked by any distinct boundary; the one passes into the other by insensible degrees, showing that there is no essential difference between them; and indeed the evidence is complete, that, although in the densest part of the bone there is scarcely any trace of specific organization, it is made up of fibres and plates perfectly similar to those of the spongy or cancellated part, differing from it principally in its greater degree of condensation. Often in the centre of the bone there is scarcely any even of the spongy matter, but a hollow space is left, which is filled up with a series of membranous cells in which the substance called marrow is lodged.

In the arrangement of the fibres in different bones, so as to adapt them to the specific offices they have to serve, there is exquisite mechanism. Where the principal object is either extensive protection, or the provision of broad surfaces for the attachment of muscles, the osseous fibres are so disposed as to form flattened plates, as in the bones of the skull. When, on the other hand, a system of levers is wanted, as in the limbs which have to sustain the weight of the trunk, and to confer extensive powers of locomotion, the bones are modelled into lengthened cylinders, generally somewhat expanded at the extremities for greater convenience of mutual connexion. The shank or body of this hollow cylinder consists principally of compact with but little spongy matter, while the extremity or head of it is principally composed of spongy matter, with only a thin crust of compact substance. The principal mechanical property required in every cylindrical lever is rigidity, and more especially the power of resisting forces applied transversely, that is, tending to break the cylinder across: it has been often stated that a given quantity of materials could not possibly have been disposed in a manner better calculated for such resistance than those in the form of a tube or hollow cylinder. The hollow stems of vegetables derive their chief strength from

possessing this form. Bones also are rendered both lighter and stronger by being made hollow than if the cylinder had been solid; and as it is in the middle of the shaft that the strain is greatest, so it is here that the cavity is largest and the resistance most effectual.

The chemical composition of bone may be easily understood from the preceding statements. The earthy salt is the phosphate of lime; the animal matter is condensed albumen. Albumen constitutes the basis of membranous matter of all descriptions. As it actually exists in bone, it bears a close resemblance to cartilage, and is probably identical with it. Into the composition of bone there likewise enters a quantity of jelly, which may be extracted from it by boiling, and the younger the animal the larger is the proportion of jelly.

It has been stated that the central cavities of some of the larger bones are filled with the substance called marrow, an oily matter contained in a series of membranous cells, which, like those in which the fat is deposited [ADIPOSE TISSUE], do not communicate with each other. Even the pores and cancelli of bone also contain a kind of oily matter, which is supposed to differ from marrow only in possessing a greater degree of fluidity. This oily matter is deposited in longitudinal canals, which pass through the solid substance of the bone, together with its nutrient vessels. The use of the marrow, and of the modification of it which constitutes the oily matter, is not well understood. Without doubt it serves the same general use in the economy as the other oily secretions. [ADIPOSE TISSUE.]

All bones are covered by a membrane named, on account of its affording them an external envelope, *periosteum*. The outer surface of this enveloping membrane is connected to the surrounding parts by cellular tissue, but its inner surface is firmly adherent to the substance of the bone. This adhesion is effected by innumerable fibres or threads, which on examination are found to consist of blood-vessels. The periosteum is in fact the membrane on which the nutrient arteries of the bone rest, divide, and ramify in order to enter the osseous substance. These threads are much more numerous in the child than in the adult; and accordingly the adhesion of the periosteum to the bone is much firmer in the former than in the latter, as the quantity of blood distributed to the bone is greater. Moreover, in general the inner surface of bones is also lined by a fine and delicate membrane, commonly termed the internal periosteum, the continuation of which forms the membranous bags in which the marrow is contained.

Great attention has been paid to the phenomena attending the growth of bone, and the facts ascertained relative to its progressive development are not only interesting and important in their own nature, but afford a singular confirmation of the correctness of the preceding statements as to its general structure. If the human embryo be examined at a very early period of its existence, that is, about the seventh or eighth week after conception, the parts destined to become bone are found soft, gelatinous, and semi-fluid; but the figure of several of the larger bones can already be distinctly traced. As yet there is not a particle of bone contained in these gelatinous masses, nor anything approaching the consistence of a solid compact substance. It is merely a semi-fluid matter contained in a delicate membrane. The newly-formed arteries of the system, by the agency of which the different structures are to be developed, gradually extending over the nascent organization, those arteries which are to form bone at length arrive at these pulpy masses. By degrees these masses are observed to acquire more consistence; and at length pass from a soft and semi-fluid state into that of a solid and firm substance, which assumes the appearance and exhibits the properties of cartilage. This cartilage, at first transparent and colourless, after some time exhibits in different parts of its surface opaque whitish spots. These spots, when examined by the microscope, are found to consist of a number of delicate lines, which progressively increase in size and density. Red points are also seen to be dispersed through them, indicating that the blood-vessels or the parts are so much enlarged as to be capable of admitting the red particles of the blood; and now particles of bone are copiously and rapidly deposited, inasmuch that the parts which were recently hard and elastic soon become hard and rigid, and this rigidity increases to such a degree that the blood seems to be scarcely capable of forcing a passage through its vessels, compressed as they are by the dense matter which accumulates around them in all directions.

Thus the first animal matter that forms the basis of bone appears to be jelly; for jelly albumen, a more highly organized substance, is soon substituted; as the process of ossification advances, the proportion of jelly gradually diminishes, while that of albumen increases. The first deposition of bony particles takes place in cartilage; this cartilage, which forms the earliest deposit or nidus of the bony particles, does not remain as a permanent part of bone, but is carried away by the absorbent vessels as the osseous matter continues to be deposited, and this first-formed cartilage is replaced by a totally new deposition of animal matter, namely, the membranous substance which subsequently forms a constituent part of bone.

Such is the process of ossification, in regard to which it has been justly and beautifully said by Dr. Roget, that as sculptors, before working upon the marble, first execute a model of a coarser and more plastic material, so the first business of the arteries is to prepare a model of the future bone, constructed, not with the same material of which it is afterwards to consist, but with another of a simpler and softer nature, namely cartilage. Until the other parts of the fabric have proceeded so far in their development as to have acquired a certain degree of solidity and firmness, and to bear as well as to require the support of more massive and rigid structures, this flexible and elastic cartilage may be employed with great advantage as its substitute. A hard and unyielding structure would, in the early stages of its formation, have even been injurious. But in proportion as the fabric is enlarged, the necessity for mechanical support increases, and further provision must be made for resistance to external violence. The removal of the cartilage may be compared to the taking down of the scaffolding which had been erected for the intended building. But this scaffolding is not taken down at once; each part is carried away piece by piece, as the operation of fixing in their position the beams and pillars of the edifice proceeds. The way is cleared at first by the absorption of the central part of the cartilage, and a few particles of ossific matter are deposited in its room. Greater activity is now displayed in the arteries, which rapidly enlarge in diameter, assume more active functions, and hasten to execute their task by depositing granules of calcareous phosphate: these are laid down particle by particle, in a certain determinate order, and in regular lines, so as to form continuous fibres. When a great number of these delicate fibres are gathered together, and connected by other fibres, which shoot in various directions across them, a texture composed of an assemblage of long spicula or thin plates is constituted. In the cylindrical bones the spicula prevail, and are arranged longitudinally, parallel to one another and to the axis of the bone. In the flat bones the fibres have a radiated arrangement, shooting out from the spot where the first deposit took place as from a common centre. The union of the fibres as they proceed from different centres is not indiscriminate, but is regulated by definite laws. Each distinct bone is formed from a certain number of ossific centres, which altogether constitute a system appertaining to that bone only, and not extending to the adjacent bones. These pieces unite together as if by a natural affinity, and they refuse to unite with the bony fibres proceeding from neighbouring centres and belonging to other groups.

Were this the whole of what takes place in the formation of a bone, the process would not perhaps differ very materially from that by which a shell is produced; for a shell is the result of successive depositions of calcareous matter, forming one layer after another, in union with a corresponding deposit of animal membrane. But the subsequent changes which occur show that the constitution of bone is totally dissimilar to that of shell; for no portion of the shell that is once formed and has not been removed is subject to any further alteration. It is a dead though perhaps not wholly inorganic mass; appended indeed to the living system, but placed beyond the sphere of its influence. But a bone continues during the whole of life to be an integrant part of the system, partaking of its changes, modified by its powers, and undergoing continual alterations of shape, and even renewal of substance, by the actions of the living vessels.

The form which had at first been rudely sketched slowly advances towards perfection in the course of its growth, and the general proportions of the parts are still preserved, the finished bone exhibiting prominences and depressions in the same relative situation as at first, and not only having

similar internal cavities, but being frequently excavated in parts which had before been solid. During all these gradual alterations of shape, however, there is no stretching of elastic parts, for all the osseous fibres and laminae are rigid and unyielding, and in this respect retain an analogy with shell. The changes thus observed can have been effected in no other way than by the actual removal of such parts of the young bone as had occupied the situations where vacuities are found to exist in the old bone. We find, for instance, that in the early state of a bone there are no internal cavities, but the whole is a uniform solid mass. At a certain stage of ossification cells are excavated by the action of the absorbent vessels, which carry away portions of bony matter lying in the axis of the cylindrical or in the middle layer of the flat bones. Their place is supplied by an oily matter, which is the marrow. As the growth proceeds, while new layers are deposited on the outside of the bone and at the end of the long fibres, the internal layers near the centre are removed by the absorbent vessels, so that the cavity is further enlarged. In this manner the outermost layer of the young bone gradually changes its relative situation, becoming more and more deeply buried by the new layers which are successively deposited, and which cover and surround it; until by the removal of all the layers situated nearer to the centre it becomes the innermost layer, and is itself destined in its turn to disappear, leaving the new bone without a single particle which had entered into the composition of the original structure.

It has been found that, by mixing certain colouring substances with the food of animals, the bones will soon become deeply tinged by them. This fact was discovered accidentally by Mr. Belchier, who gives the following account of the circumstances that led him to notice it. Happening to be dining with a calico-printer on a leg of fresh pork, he was surprised to observe that the bones, instead of being white as usual, were of a deep red colour; and on inquiring into the circumstances he learned that the pig had been fed upon the refuse of the dyeing vats, which contained a large quantity of the colouring substance of madder. So curious a fact naturally attracted a good deal of attention among physiologists, and many experiments were undertaken to ascertain the time required to produce this change, and to determine whether the effect was permanent or only temporary. The red tinge was found to be communicated much more quickly to the bones of growing animals than to those which had already attained their full size. Thus the bones of a young pigeon were tinged of a rose colour in twenty-four hours, and of a deep scarlet in three days; while in the adult bird fifteen days were required merely to produce the rose colour. The dye was more intense in the solid parts of those bones which were nearest to the centre of circulation, while in bones of equal solidity, but more remote from the heart, the tinge was fainter. The bone was of a deeper dye in proportion to the length of time the animal had been fed upon the madder. When this diet had been discontinued the colour became gradually more faint till it entirely disappeared.

From the whole of what has been stated it is manifest that bone possesses blood-vessels, nerves, absorbents, and all the parts that form the essential constituents of an organized and living body. It is as much alive as the heart or the brain. In its natural and healthy state it has indeed but few blood-vessels, and still fewer nerves, and the existence of absorbents is rather inferred than demonstrated, these vessels being too minute to be visible; but their existence is inferred as well from analogy as from many of the phenomena which have been detailed, and which are wholly inexplicable but upon the supposition of the existence and action of these vessels. Moreover, bone is subject to all the diseases of living parts, inflammation, tumefaction, suppuration, and gangrene, and when diseased it often becomes exquisitely sensible. There is indeed no difficulty in supposing that the animal matter is alive, but how is it possible for life to be attached to an earthy salt? Yet on a careful examination of this subject, as has been forcibly urged by Dr. Bostock, it will be found no easy matter to point out any essential difference between the earthy and the animal substance. Both are derived from the blood; both are deposited by vessels connected with the arterial system; both possess a specific determinate arrangement; both after a certain period are taken up by the absorbents and again carried into the mass of the circulating fluids; both, before they are ultimately expelled from the system

or are again applied to any other use in it, undergo decomposition, in order that part of their elements may be employed in forming new compounds, while the remainder may be rejected by some of the excretory passages. 'I should be inclined therefore,' says this physiologist, 'to say that the phosphate of lime while forming a part of an organized body is alive, because the bone is so generally; but the phosphate of lime or its elements while they are circulating in the blood or passing off by the kidney or alimentary canal, cease to be so, in the same manner as the carbon which is expired from the lungs, or the mucus which is expelled from the mouth, are not considered as being alive, although they may perhaps a short time before have been employed in the composition of a muscle or nerve. This view of the subject will lead us to reject the mechanical idea which has been entertained by some physiologists, that the earthy matter of the bones is simply deposited in the interstices of the membrane, and has its particles kept together merely by the cells in which they are lodged. I conceive that the earthy particles have an affinity for each other, and perhaps for the membrane by which they are combined in a form that belongs to them as necessarily as to any of the soft parts, although it produces in them a peculiar arrangement which may not be found in any other substance.' (Monro's *Outlines of the Anatomy of the Human Body*; Bostock's *Elements of Physiology*; Roget's *Animal and Vegetable Physiology*; Sir Charles Bell's *Lectures on the Hunterian Preparations in the Museum of the Royal College of Surgeons, in illustration of Anatomy and Physiology*; Abernethy's *Physiological Lectures*; Southwood Smith's *Philosophy of Health*.)

BONES have been of late years very extensively used as manure, especially on poor and dry sands and gravels. Many cargoes from abroad have been imported for this purpose into the eastern ports of Britain. Bones have thus become a considerable article of commerce with Germany, Belgium, and Holland: so much so that the governments of some of these countries have had it in contemplation to subject them to an export duty.

Experiments on bones as a manure were made long before their use was extensively adopted, and these, in general, were not attended with a very favourable result, in consequence of the bones not being broken into sufficiently small pieces, or being put upon the land in too fresh a state. But since mills have been erected to crush them to a small size, and the proper use of them has been ascertained, the advantage of this manure, in distant and uncultivated spots, where the carriage of common stable or yard manure would have been too expensive, and where it could not be made for want of food for cattle, is incalculable. By means of bones large tracts of barren sands and heaths have been converted into fertile fields.

The bruising or grinding of bones has become a distinct business, and they may be bought in London and at the principal ports ready to put upon the land. They are broken into different sizes, and are accordingly called *rack bones*, *half-inch bones*, and *dust*. Most of the bones procured from London and the manufacturing towns have undergone the process of boiling, by which the oil and a great part of the gelatine which they contain have been extracted.

At first sight we should be led to imagine, that having lost much of the rich animal matter which they contained, they would be proportionably less effective in the soil. This, however, does not seem to be the case from the comparative experiments made with bones which had been subjected to boiling, and those which were quite fresh. All those who have used bones extensively report, that little difference can be observed between them: some even give the preference to those from which the oil and glue have been extracted. But oil and glue form excellent manures. How is this to be explained? It appears, from the result of many experiments, that bones do not furnish much nourishment to the roots of plants until they have undergone a certain degree of decomposition. The fat and the gelatine, being intimately blended with the bony matter, and contained in cavities or cells, may remain a long time in the earth without decomposition. As a proof of this, it has been found that bones which had lain in the earth for many centuries, on spots where ancient battles were fought, afforded, on analysis, nearly as much gelatinous matter, by the abstraction of the earthy parts, as fresh bones would have done. Bones analysed by Fourcroy and Vauquelin were found to consist of

	Parts.
Solid cartilage, gelatine and oil	51
Phosphate of lime	37·7
Carbonate of lime	10
Phosphate of magnesia	1·3

100

It would seem, then, that the great effect of bones, as a manure, must depend on the phosphate of lime; and the effect of bone-ashes seems to strengthen this opinion. But a close examination of the fields manured with bones has led us to surmise, that much of their importance depends on the mechanical texture of the bone, and on its power of absorbing and retaining moisture; for if a plant, which vegetates with peculiar vigour in a field manured with bones be pulled up, it will be almost invariably found that small pieces of bone are attached to the roots; and when these are minutely examined, the smaller fibres of the roots will be found to have grasped them, and to pervade their cavities, which will always be found more or less moist. The moisture, then, and a small portion of the remaining gelatine dissolved in it, forms the food on which the plant has thriven. The more the bones have undergone fermentation, the more soluble the gelatine will be. In its fresh state, it is only soluble in very warm water, and the oil repels moisture. This accounts for the seeming anomaly of the superiority of boiled bones. They have undergone a fermentation. The residue, although not deprived of all its animal matter, is much more porous, and will imbibe and retain moisture in its pores. The food of the plants is here ready prepared and dissolved, and kept in store without being in danger of being washed through a porous soil or evaporated by the heat. The solid substance, which is chiefly phosphate of lime, has a stimulating effect, and assists that of the more soluble parts. But phosphate of lime is not soluble in water, and does not decompose readily in the earth; its effect therefore is not so great as to account for the general result. The universal experience of all those who have used bones as a manure proves that they are of little or no use in very stiff or wet soils. In stiff clays the pieces of bone are bedded in a tough substance, which prevents their decomposition; and in very wet soils the advantage of these small but numerous reservoirs of moisture is lost. Hence it is easily seen why bones are of less use in such soils.

But it is ascertained that the effect of bones on the crop is much increased when they have been previously mixed in heaps with ashes, burnt clay, or light loam, or made into a compost with the dung of animals, and with vegetable substances. In this case, the fresh bones will evidently be much more advantageous than those which have been boiled; for the fermentation will extract and decompose the oil and a great part of the gelatine, which, mixed with the other ingredients of the compost, will much enrich them; while the bony residue will be in the same state as it would have been if the bones had come from the boiling-house. By comparing all the facts, we naturally come to the conclusion, that the most economical use of bones is to extract from them the oil and gelatine, which, if not of sufficient value for the manufacture of glue or of ammonia, may be used as a supplementary food for pigs, in the form of a broth or pot liquor, which, mixed with meal, will greatly accelerate their growth or increase their fat. For this purpose the bones should be broken in the mill to a moderate size, like those called *inch* bones; they should then be boiled or steamed for several hours, and the liquor strained; this, on cooling, will be found to form an animal jelly of more or less strength, which may be thickened by boiling, and finally dried into a glue or portable soup, which will keep for a considerable time.

The price of fuel and attendance being calculated, it will be seen whether this operation is a real economy or not; if not, the bones may be allowed to ferment in a heap, being mixed with sand or coal-ashes. In this case, they may be ground at once to the size called half-inch; in the other, they may be passed again through the mill after having been boiled.

The mode of applying bone-manure to the land is either by sowing from twenty to forty bushels of them per acre by the hand broadcast, as is done with corn, and harrowing them in with the seed; or by putting them into the drills by a machine made for the purpose, which is an addition to the common drilling machine. This is the most ap-

proved method, and the crop for which they are best adapted is turnips, after the land has been well cleaned and tilled. About twenty-five bushels per acre is sufficient to produce a good crop on poor light sands, and it does not appear that beyond this quantity they have a proportional effect. It is better therefore to repeat the dressing than to put on much at once. When used as a top-dressing for grass-land, they have, in some instances, produced a great and very durable improvement, when the quantity was large; but in most other cases it has been found much more advantageous to reserve them for turnips or corn. Bones have been drilled with wheat, at the rate of thirty bushels of bones and two and a half of wheat per acre, and a good crop (twenty-four bushels per acre) has been obtained on very poor soil: while portions of the same field sown without any bones, in order to ascertain the effect, did not produce sufficient plants to cover the ground or return the seed.

When bones are compared with farm-yard dung the result has been various, and chiefly owing to the seasons and the nature of the land. In strong loams or in very moist seasons the farm-yard dung, put on at the rate of from ten to fifteen tons per acre, has decidedly the advantage, not only for the turnips but for the subsequent crops. On very dry gravelly soils and in dry summers the bones produced the best turnips; and when the comparative cost is taken into consideration, and the saving of time in the light carriage of the bones, it will be seen that the bones are much more economical. Besides this, farm-yard or stable dung cannot always be procured in any considerable quantity, while bones may be had almost to any amount, if bespoken in proper time. Many large tracts of waste land have been brought into cultivation by means of bones, as the only manure which could be procured, and without which they must have remained in a barren state. Bones have also been compared with rape-cake and malt-dust, but there has not been a sufficient number of experiments, made carefully, to give an accurate comparison. It is highly probable that these last, when they can be procured sufficiently cheap, would greatly assist the effect of bones if mixed with them, and would render the success of a crop of turnips more certain under all circumstances of soil or season. Every practical farmer knows that a good crop of turnips is the foundation of all the subsequent crops in the course. A great advantage of manuring land with bones is that they introduce no weeds, which farm-yard dung inevitably does. This is probably the reason why they have been chiefly used on land which has been fallowed; and turnips being the usual crop first sown on such light lands as are most benefited by bone-manure, the greatest number of experiments have been made with this crop. That they are an excellent addition to the list of artificial manures previously used is very clearly shown by the answers to queries made by the Doncaster Agricultural Association, of which an interesting report has been published. Whatever difference there may be in the opinion of some of the numerous agriculturists who have sent answers on this subject, as to the effect of bones on different soils, all who have tried them to any extent have continued the use of them. This simple circumstance says more in favour of bones than the most elaborate argument, and the only question will be, at what expense they may be procured, and on what lands they have the best effect. When the immense quantity of bones from the cattle daily slaughtered is considered, and the readiness with which any commodity for which there is a demand is procured in commerce, there can be no great fear of a deficient supply. But it is probable that the price may be so increased by a great demand as to make it a matter of nice calculation, whether their use may be attended with profit or not. If once they are very generally used, their price will arrive at a maximum, and find its natural level. At present they may be obtained in London and at the principal ports for about 2s. per bushel coarsely ground, and 2s. 6d. to 3s. when in a finer state; and at that price, with a small addition for carriage, they will be found the cheapest manure that can be purchased for dry, gravelly, and sandy soils.

The mill which is used to break and grind bones consists of two iron or steel cylinders, with grooves running round their circumference, the projections being cut so as to form strong teeth. These turn upon one another by means of machinery, so that the teeth of one run in the groove between the teeth of the other, as may be seen in the annexed cut.

An instrument has also been invented for distributing

ployment of signs, which though in some degree unlike at first, would become modified and assimilated by intercourse. The auxiliaries which Bonet made use of in the instruction of deaf-mutes were artificial pronunciation, the manual alphabet, writing, and gesture or the language of signs. Minute details of the proceedings of the instructor on these several heads are contained in his work. He taught his pupils to understand the Spanish language, and the rules of grammar. His work fully explains how he proceeded with the three sorts of words into which he divides the language, namely, *nouns, verbs, and conjunctions*; and from the simple name of an object to words which express the moral dispositions and the affections of the heart. The manner of teaching the different kinds of conjunctions and verbs is also carefully explained. The philosophical views presented in the latter portion of his work are replete with practical utility, and are in many respects similar to those which are acted upon at the different institutions for the deaf and dumb, in this and other countries. This is the work which the Abbé de l'Épée designates as one of his 'excellent guides' in the earlier part of his experience as an instructor of the deaf and dumb, and the manual alphabet which the abbé adopted, and which is at present used in the institutions on the continent of Europe and in America, is nearly the same as the one given in that work. An account of the success of Bonet has been left by Sir Kenelm Digby, in his treatise 'Of Bodies,' from which it appears that the pupil not only understood others when they spoke, but also spoke himself so that others could understand him. 'What at the first he was laughed at for made him, after some years, be looked on as if he had wrought a miracle. In a word, after strange patience, constancy, and pains, he brought the young lord to speak as distinctly as any man whoever; and to understand so perfectly what others said, that he would not lose a word in a whole day's conversation.' (*Of Bodies and of Man's Soul*, chap. 28. p. 319.) Sir Kenelm Digby and other authors speak of Bonet as a priest: he is also said to have been in the service of the prince of Carignan, and to have continued his employment as a teacher of the deaf and dumb for many years.

BONET, THEOPHILUS, an eminent physician, was born at Geneva on the 5th of March, 1620. His family was originally Italian and of noble rank, but his ancestors had removed from Rome to the south of France about a century previous, in order to enjoy the free exercise of their religion. His grandfather being compelled to have recourse to some means of gaining a livelihood, chose the profession of medicine, and obtained such eminence, that he was invited to Turin to become physician to Charles-Emmanuel, Duke of Savoy. But he appears to have possessed too much independence of mind to have retained the court favour, and he consequently removed to Lyons. Here, in 1556, Andrew Bonet was born. He also practised medicine, and after losing his first wife he removed to Geneva, where, having married a second time, he had two sons, John and Theophilus. The hereditary celebrity of the family determined both to study medicine; but though the former arrived at great eminence, he left no work to testify his ability. Theophilus, after having visited many of the most celebrated universities, took the degree of doctor of medicine in 1643. Soon after this the Duke of Longueville appointed him his physician, and he quickly rose to eminence by the success of his treatment.

During the course of his practice he was diligent in collecting observations on the progress and terminations of diseases, which formed the basis of his subsequent publications. His earliest work was 'Pharus Medicorum, id est, Cautels, Animadversiones et Observationes Practicæ,' Geneva, 1668, 2 vols. 12mo. Each time this work was reprinted he enlarged it and altered the title, so that the edition of 1679 was called 'Labyrinthus Medicus extricatus,' 4to. Geneva; and that of 1687, 'Methodus Vitandorum Errorum qui in Praxi occurrunt,' 4to.

Incurable deafness having compelled him to retire from practice, he devoted his time to digesting his observations, and published his celebrated work, in 1679, entitled 'Sepulchretum, seu Anatomia Practica,' 2 vols. folio, Geneva, which Mangetus republished with additions at Geneva in 1700, 3 vols. folio. This formed the basis of the great work of Morgagni, 'De Causis et Sedibus Morborum,' who highly esteemed the labours of his predecessor. Lieutaud also availed himself of this valuable repertory of facts in morbid anatomy.

The other works of Bonet attest his industry, but are of less utility: 'Mercurius Complatitius, seu Index Medicæ Practicæ,' Geneva, 1683, fol.; 'Medicina Septentrionalis Collatitia,' Geneva, 1685, 2 vols. fol.; 'Polyalthes,' 3 vols. fol. Geneva, 1690, 1691, 1693. This is a bulky commentary on 'Johnstoni Syntagma Nosocomices.'

Bonet became subject to dropsy, and died on the 29th of March, 1689, in the seventieth year of his age. He possessed great knowledge, and was distinguished for his modesty and affability. (Eloy, *Dictionnaire Historique*.)

BONFAD'IO, JA'COPO, was born in the beginning of the sixteenth century at Gazzano, near Salò, on the banks of the lake of Garda. He studied at Padua, and afterwards proceeded to Rome, where he became secretary to Cardinal di Bari, with whom he remained three years, which he mentions in his letters as the happiest of his life. Cardinal di Bari having died, Bonfadio entered the service of Cardinal Ghinucci, but here he met with an enemy in the person of another dependant of the Cardinal, on whose account Bonfadio left. He was on the point of going to Spain with an envoy of the Duke of Mantua to Charles V. when the envoy suddenly died. He then went to Naples, where he became intimate with Pietro Carnesecchi, who was afterwards burnt at Rome for heresy. From Naples Bonfadio wandered about several parts of Italy, until he was invited by Bembo, who was then living at Padua, to come to his house, about 1540, and undertake the education of Bembo's son Torquato. Bonfadio appears to have remained at Padua five years. From Padua he now and then visited the banks of his native lake, and also occasionally Coloniola, a villa of his learned friend Marc Antonio Flaminio. He has praised, both in his Italian letters and in his Latin verses, the pleasant scenery of those places. At one time he had the idea of founding an Academy on the banks of the lake of Garda, and he applied to Count Martinengo and other noblemen of Brescia to countenance his project. Having accepted in 1545 the professorship of philosophy in Genoa, he was commissioned to write the history of the republic. He began it from the year 1528, where Foglietta had closed his narrative, and continued it till the year 1550. The work, which is written in Latin, is entitled *Annalium Genuentium Libri Quinque*, and was published after his death at Pavia, 1586. It was translated into Italian and published at Genoa the same year. Both the text and the translation were published at Brescia, 1759. In describing the organic changes effected in the constitution by Andrea Doria in 1528, the conspiracy of Fieschi, and other then recent events, Bonfadio spoke of several individuals connected with those factions in a tone which probably offended their relatives, who were still powerful at Genoa. However this may be, he was arrested in the year 1550, beheaded in prison, and his body publicly burnt. Of the contemporary writers who relate this catastrophe, some are silent about the charges against him, and others hint that he was sentenced upon an accusation of unnatural practices, but in reality through political animosity, or, as it was called, 'reason of state.' Mazzuchelli gives at length, with his usual accuracy, all these various authorities, and concludes by leaving the question of Bonfadio's guilt involved in doubt, as he could find no documents existing at Genoa of the trial. The register of the prison merely states the sentence, but does not give the charge. The proceedings of trials at that time were secret, and even the charges on which capital sentences were founded were not always made known to the public. Bonfadio's 'Genoese Annals' are generally admired for their style, which in many passages reminds the reader of Salust. Bonfadio's Italian Letters, already mentioned, have been collected and published by Mazzuchelli, Brescia, 1746. They are considered among the best specimens of Italian epistolary composition, and are also interesting for the descriptions of places, manners, and incidents. He also wrote *Carmina*. 12mo., Verona, 1740; *Rime*, which are praised by Crescimbeni, and are found scattered in various collections; and an Italian translation of Cicero pro Milone.

BONIFACE I. was elected bishop of Rome after the death of Zosimus, A.D. 419. Part of the clergy, supported by Symmachus, prefect of Rome, elected Eulalius, but the Emperor Honorius, who was then at Ravenna, confirmed Boniface's election. Several letters from Boniface to the bishops of Gaul, concerning matters of discipline, and to the bishops of Africa, who would not allow of appeals to the see of Rome, are in Constant's collection, and give a favour-

able opinion of his character and learning. He asserted the authority of the Roman see over the churches of Illyricum, upon which contested point there are letters extant from Boniface to Rufus, bishop of Thessalonica, and also between the two emperors, Arcadius and Honorius. Boniface died A.D. 423, and was succeeded by Celestinus I.

BONIFACE II. succeeded Felix IV. in 530. It is recorded of him that, although a native of Rome, he was the son of a Goth. His was also a disputed election. Part of the Roman clergy assembled in the Basilica Julia chose Dioscorus, while the rest met in the Basilica of Constantine for the election of Boniface. The schism lasted only twenty-eight days, when Dioscorus fell ill and died. Boniface passed several regulations against bribery in the elections of bishops, and he also condemned the practice of a bishop appointing his own successor. Platina, *Vita Pontif.* He died in 532, and was succeeded by John II.

BONIFACE III. was elected in March, 607, and died in November of the same year. He obtained of the Emperor Phocas the acknowledgment of the supremacy of the see of Rome over all other churches. This circumstance renders his pontificate remarkable. He was succeeded by

BONIFACE IV., who consecrated the Pantheon, having first removed the images of the heathen gods, and dedicated it to the Virgin Mary and all the martyrs. He transformed his paternal house in the country of the Marsi into a monastery, on which he bestowed all his property. He died in 615, and was buried in St. Peter's church. Boniface has been canonized by the church of Rome. He was succeeded by Deusdedit, who was himself succeeded in 619 by

BONIFACE V., a Neapolitan, who died in 622, and was succeeded by Honorius I.

BONIFACE VI., a native of Tuscany, and son of the Bishop Adrian, succeeded Formosus in 895, and died fifteen days after his election. He was succeeded by Stephen VII.

BONIFACE VII., Cardinal Franco or Francone, was elected in a popular tumult, when Benedict VI. was seized and strangled in 974. Boniface himself was expelled from Rome in the following year, having incurred general detestation through his licentiousness and cruelty. Boniface is not considered a legitimate pope, though his name is registered as such in most chronological tables. He returned to Rome in 985, and put John XIV. in prison, where he died of hunger, as it is reported. Boniface again assumed the papal dignity, which he retained a few months, till August of the same year, when he died, and John XV. was elected pope.

BONIFACE VIII., Cardinal Benedetto Gaetani of Anagni, succeeded in January, 1294, Celestine V., whom he had persuaded to abdicate on the ground of incapacity, and whom he afterwards confined in the castle of Fumone, where Celestine died a few months after, under suspicious circumstances. Boniface interposed between Charles II. of Anjou, king of Naples, and James of Aragon and of Sicily, and made the latter consent to give up Sicily to Charles. But the Sicilians would not be surrendered to their hereditary enemy; they proclaimed Frederic, James's brother, their king, and resisted both the arms of Charles and the intrigues and the threats of Boniface, who launched his excommunications against them without effect. In 1297 James of Aragon came to Rome and was induced by Boniface to turn his arms against his brother Frederic, on which condition the pope granted him the investiture of the crown of Sardinia.

In the contest about the succession to the German empire, after the death of Rudolf of Hapsburg, Boniface took the part of Adolf of Nassau against Albert of Austria, Rudolf's son. At the same time Boniface waged a war of destruction against the Colonna, a powerful feudal family, which held possession of several towns and estates in the countries of Rome and Naples. The origin of this quarrel is not clearly ascertained. It appears that two cardinals of the house of Colonna had opposed Boniface's election, and afterwards refused to admit papal garrisons into their castles. Boniface accused them of having dissipated the treasures of the church, of holding correspondence with Frederic of Sicily, and other charges. The two cardinals wrote to the French and other kings against Boniface, complaining of his arrogance, and questioning the validity of his election. Upon this the pope excommunicated the whole family of Colonna and their adherents, calling them heretics, and declaring that they had forfeited their honours and estates

and property of every sort. Further, he proclaimed a crusade against them, besieged Prencate, which he took and razed to the ground; and he destroyed likewise Zagarolo and Colonna, fiefs of the same family. The two cardinals escaped to France, and Sciarra their uncle was obliged to conceal himself in the forests near Anzio, whence he afterwards escaped by sea only to fall into the hands of pirates.

Boniface proclaimed the first jubilee in the year 1300, granting by a bull a plenary indulgence to all those who should visit the sanctuaries of Rome in that year. This attracted an immense multitude of foreigners to Rome. The historian Villani, who went there himself, reckons the number of strangers at 200,000 at one time, and the chronicle of Asti states the number of all those who visited Rome during that year at two millions. This jubilee brought to Rome a vast quantity of money. Before Boniface's time plenary indulgence had been granted only to those who went to the crusades for the deliverance of the Holy Land.

Boniface, still aiming at the reduction of Sicily, sent for Charles de Valois, brother of Philip le Bel, king of France. On arriving at Florence Charles supported the faction of the Neri, by which Dante and many others were exiled. He then went over to Sicily, but after a desultory warfare peace was made, and Frederic was acknowledged as king of Trinacria in 1303, on condition of his paying to the Roman see a tribute of 3000 onze, or 15,000 florins. A serious quarrel soon after broke out between the pope and Philip le Bel. The pope pretended to share with the king the tithes levied on the clergy; he also created the new bishoprick of Pamiers without the king's consent, and he appointed the bishop his legate in France. The bishop behaved insolently to the king, who arrested him and gave him in charge to the Archbishop of Narbonne. Upon this Boniface excommunicated the king, placed his kingdom under interdict, and wrote to Albert of Austria, confirming his election and inviting him to make war against France. Philip assembled the states of the kingdom and laid before them twenty-nine charges against the pope, accusing him of simony, of heresy, of licentiousness, and even of sorcery, and appealing to a general council of the church. Some of the charges were either invented or exaggerated by Philip, who was a most unprincipled man, although at the same time Boniface's conduct was far from irreproachable. The next measure of the pope was to proclaim all Philip's subjects released from their allegiance. The king resolving to put an end to this to him dangerous struggle, sent Guillaume de Nogaret, a bold unscrupulous man, to Italy, with money and letters for the partizans of the Colonna and the other enemies of the pope. Nogaret was joined by Sciarra, who had escaped from captivity. The pope was at Anagni, when Nogaret and Sciarra suddenly entered the town followed by armed men, overcame the pope's guards, and arrested Boniface himself. Nogaret was for taking him to Lyons, where the council was to assemble; but Sciarra insisted upon Boniface abdicating, abused him, and even strook the old man with his gauntlet. Boniface behaved with dignity and firmness; he was kept three days in confinement, during which it is said he would not take any food. At last Cardinal del Fiesco induced the people of Anagni to rise and deliver the pontiff, and Sciarra and Nogaret were obliged to leave the town. Boniface returned to Rome, but his health had received so severe a shock, that he fell ill and died, October, 1303, after about nine years of a most turbulent pontificate. P. Dupuy and A. Baillet have written the history of the quarrel between Boniface and Philip le Bel. Boniface was one of the most strenuous assertors of the assumed supremacy of the pope over princes and nations in temporal as well as spiritual matters. He was an inveterate persecutor of the Guibelines, for which Dante has alluded to him at length in canto xxvii. of the 'Inferno.'

BONIFACE IX., Cardinal Pietro Tomacelli, a Neapolitan by birth, was elected in 1369 by the cardinals at Rome after the death of Urban VI. This was the time of the great Western schism as it is called, which began between Urban and Clement, styled the VIIth, who held his court at Avignon. Clement having died in 1394, the cardinals of his party elected Pedro de Luna by the name of Benedict XIII. Boniface however continued to exercise the papal authority at Rome, regardless of the Avignon popes and conclaves. Endeavours were made by several

sovereigns to assemble a council and put an end to the schism, but both Boniface and Benedict were averse to this measure.

Boniface died at Rome in 1404, and was succeeded by Innocent VII. The church of Rome has ever since acknowledged Urban and Boniface and their successors as legitimate popes, and considered Clement and Benedict as anti-popes. [БЕНЕДИКТЪ, АНТИ-ПОПЪ.]

During his pontificate of nearly fifteen years Boniface was involved in the Italian wars of that turbulent period. He first favoured the claims of the Angevins to the throne of Naples, but afterwards recognised the more fortunate Ladislaus as king. Perugia and other towns of Umbria and the Marches acknowledged the pope as their suzerain in Boniface's time. Boniface is charged with being addicted to a worldly policy, having seized upon the ecclesiastical revenues for temporal purposes, and enriched his brothers and nephews.

BONIFACE, SAINT, a native of Devonshire, was born about A.D. 680. He became a monk, and resided for a time in a convent at Southampton, where he acquired reputation for learning and piety. When thirty-six years of age he set out for Rome, where he expressed to Pope Gregory II. his wish to preach the gospel to the heathen nations of Germany, where two of his countrymen, Wilfred and Willibrod, from Northumberland, as well as Kilian, an Irish bishop, had preceded him. The pope having sanctioned his vocation, Boniface joined Willibrod in Frisia, from whence he repaired to Thuringia, Franconia, and other parts of central Germany. There he found a strange mixture of idolatrous and Christian rites, and the people plunged in ignorance and barbarism. For more than thirty years he laboured in converting and civilizing the rude natives, and he well deserved the title which has been given him of 'the Apostle of Germany.' He founded four cathedrals, Erfurt, Bonaberg, Aichstadt and Würzburg, with a school attached to each, and he established numerous monasteries both for monks and nuns. These monasteries were generally built upon uncultivated grounds, which were cleared and tilled by the new inmates, and thus agriculture kept pace with the diffusion of Christianity. The monastery of Fulda, founded by Sturm, one of Boniface's disciples, was the means of reclaiming a vast tract of ground which had been till then covered by forests. In discussing in our days the question of the use and abuse of monastic institutions, we ought not to overlook the fact, that monks were the great civilizers of modern Europe in the dark ages which followed the destruction of the Roman Empire. Boniface was made archbishop of Mainz, and metropolitan of all the new dioceses on the right bank of the Rhine. He sent for missionaries from Britain to assist him in his arduous task, and Willibald, Wunibald, Burchard, Lullus, Lebuin, Willihad, and the nuns Lioba, Thecla, Walburg and others, obeyed his summons. Boniface was supported by Carloman, and afterwards by Pepin, sons of Charles Martel, whose authority or influence extended over a considerable part of Germany. 'Without the protection of the Frank princes (he observes in one of his letters to his friends at Winchester) I could neither govern the people nor protect the priests and virgins consecrated to God; without his prohibitions, without the penalties which he denounces on those who refuse to obey me, vain would be the attempt in this country to abolish heathen ceremonies or idolatrous sacrifices.' (*Epistola S. Bonifacii*, quoted by Dunham in *History of the Germanic Empire*, vol. ii.) In reading the regulations of Boniface for the discipline of his flocks, we are enabled to judge of the low state of morality which he found in Germany, of the difficulties he had to encounter, not only on the part of the heathens, but from the converts themselves, and of the beneficial effects which his injunctions and example must have had on the people at large. In 755 Boniface again visited Frisia, a country still in great measure pagan. Having assembled a multitude of converts he pitched tents in a field for the purpose of giving them confirmation, when a band of heathens fell upon the encampment, and killed or dispersed the congregation. Boniface was among the killed. (*Vita S. Bonifacii* in Mabillon, tom. iv., and Dunham's *History of the Germanic Empire*.)

BONIFACIO, a town of Corsica, on the S. extremity of the island, facing the coast of Sardinia. It is a fortified town, has a good harbour, and about 3,000 inhabitants. The town is built on a hill which projects into the sea. Bonifacio was originally a colony of the Genoese in the 14th

century. The country near Bonifacio is one of the most fertile and pleasant districts of Corsica. It produces corn, fruit, and has good pastures. Bonifacio is 44 m. S.E. of Ajaccio, in 41° 23' N. lat. and 9° 10' E. long.

BONIFACIO, STRAITS OF, divide Sardinia from Corsica. The narrowest part between Longosardo in Sardinia and the southernmost point of Corsica, E. of the town of Bonifacio, is about 10 m. wide. At the E. entrance of the Straits are several clusters of islands, the principal of which is the Island of Maddalena, belonging to Sardinia. Near the Corsican coast is the Island of Cavallo, and between that and Maddalena is Santa Maria, with several other islets and rocks, which make the Mediterranean sailors in general avoid passing through the Straits, unless they are compelled. The land on both sides of the Straits is mountainous. The islands in these Straits were noted for contraband trade during the maritime war in the time of Napoleon.

BONIN, or ARZOBISPO ISLANDS, a group of islands in the North Pacific, lying about N. by E., extending from 27° 44' N. lat., seen as far to the southward as 26° 30', and probably running much farther in that direction. In longitude the known portion is comprised between 143° and 144° E. long. The only account of them is from the visit of the Blossom in 1827; and Captain Beechey observes that they correspond so well with the description of a group called Yslas del Arzobispo in a work published many years ago at Manilla (*Navigacion Especulativa y Practica*), as to leave no doubt of their being the same. They had been expunged from the chart all but three, called Los Volcanos, as Gore, Perouse, and Kruzenstern had passed to the N. and S. without seeing any other than these; but in 1823 they reappeared in Arrowsmith's map.

They consist of three distinct groups: the northern, called Parry's Group, are mostly small islands and rocks. The central, called Baily's Group, consists of larger islands, separated from each other by narrow and deep channels. In the southern group the islands appear to be still larger and higher, but of this portion little is known, as Captain Beechey had not time to examine them. It appears that in 1823 a whale-ship commanded by Mr. Coffin anchored among this southern group, and that Mr. C. gave his name to the port, and was the first who furnished any certain information concerning this archipelago.

The islands are of volcanic formation, and smoke is seen to issue from some of them: they are steep and high, and wooded to the shores. The coasts are steep and craggy: in many places basaltic columns of a grey or greenish hue appear, resembling the Giant's Causeway in miniature; olivine, hornblende, and chalcodony are found. The islands are surrounded with sharp rugged rocks, and often with coral reefs: the water around them is very deep. They are quite uninhabited, but at the time of the Blossom's visit two of the crew of a whaler which had been wrecked in Port Lloyd were living on one of the islands, and had got a piece of ground under cultivation. The rest of the crew had been taken off by another whaler, but these two preferred remaining. The islands abound in the cabbage and fan palms, the former of which is an excellent vegetable, areca, pandanus, tamanu of Otaheite, and various other trees: the sea also contains abundance of turtle ray, eels, cray-fish, and a great variety of others, of the most beautiful colours. Of birds, there are brown herons, plover, rails, snipe, wood-pigeons, crows, and small birds; also a species of vampire bat, some of which measured three feet across the extended wings, with a body eight or nine inches in length. No quadrupeds were seen. The islands are subject to earthquakes, and in winter to violent storms, in one of which (January, 1826) the water rose twelve feet in Port Lloyd. The currents about the islands run very strong, and principally to the northward.

The name Bonin, by which they are known on our maps, is derived from Japanese accounts of a group called Bon-in Sima; but setting aside the geographical inaccuracy of the position there assigned them, it appears from the description given by M. Abel Renussat, in the *Journal des Savans*, September, 1817, that these cannot be the same. They appear to abound in good harbours, and are now frequently visited by whalers, who go to them for turtle, fish, and the cabbage palm. (Beechey's *Voyage to the Pacific and Behring's Straits*.)

BONN, one of the eleven minor circles of the circle of Cologne, which forms that part of the Rhenish provinces belonging to the crown of Prussia, which is designated 'the

province of Cleves, Juliers, and Berg.' It consists of a portion of the former possessions of the archbishops of Cologne, and contains within an area of about 105 square miles, 1 town, 58 villages, and 28 hamlets, 78 churches and other places of worship, 114 public buildings, and about 6800 private dwelling-houses. The Rhine, with the exception of the burgomastership of Vilich, which lies on the right bank of that river, is its eastern boundary. The soil is throughout productive, and favourable to the growth of all descriptions of grain; the average annual produce of which in good years is estimated at about 392,800 Berlin bushels, or 72,800 British imperial quarters. Wine and tobacco are also raised. The population, which was 35,202 in 1816, 38,952 in 1825, and 42,447 in 1831, is at present about 44,800. Exclusive of the chief town and university, the circle contains one gymnasium, and one Protestant and forty-four Roman Catholic national or elementary schools. In every forty inhabitants there is not more than about one Protestant. The burgomastership of Bonn, one of the nine into which the circle is divided, contains the town and university of the same name, a place of some antiquity, situated on a gentle eminence, in a pleasant and fertile country, on the left bank of the Rhine. In records of a remote date it was called *Bunna*, a word which Arndt derives from the Celtic 'Buhn,' a spot containing productive fields, pastures, and water-courses. *Bonna* became the head-quarters of the sixth Roman legion, and, according to Antoninus's 'Itinerary,' was afterwards kept up as one of the Roman strong-holds on the Rhine. It rose ultimately to be a place of some note, and was attached to the second of the Germanic provinces A.D. 70. According to Tacitus (*Hist.* iv. 20), the Roman troops under Herennius Gallus were defeated near Bonn by the Batavians under Claudius Civilis: the ditches of the place were filled with dead bodies, and numbers were slain during the confusion by the arrows of their brother combatants. *Bonna* and *Novesium* (or *Neuss*) are repeatedly mentioned in the subsequent account of the Batavian contest as places where the Roman generals mustered their forces. Bonn is less frequently alluded to after this time: it is affirmed by some, though scarcely on sufficient grounds, to have embraced Christianity in the 88th year of the Christian æra, in consequence of the preaching of Maternus, bishop of Cologne; and it is known that Helena, the mother of Constantine the Great, about the year 316 built the church in this town, on the site of which the Minster church was afterwards built. In the year 355 Bonn was destroyed by an irruption of German tribes, and in 359 was rebuilt by the Emperor Julian. Under the Frankish sovereigns it is said to have borne the name of *Verona*: in 755 Charlemagne crossed the Rhine at Bonn, in his second campaign against the Saxons; and in 881 it was almost ruined by the Normans. In 1240 it was surrounded with walls and a ditch by the archbishop of Cologne, who conferred a variety of immunities upon it: from the year 1320 it was the constant residence of the archbishops of Cologne. The Emperor Charles IV. was crowned here in 1346, about which time it had risen into sufficient importance to conclude a treaty of defensive alliance with Cologne and other towns on the Rhine, when it undertook to furnish an auxiliary force of 500 men. During the Thirty years' war Bonn was exposed to great sufferings and vicissitudes. In 1673 the French, who had possessed themselves of the place, were besieged in it by the prince of Orange and Montecuculi, and surrendered after a slight resistance: having regained possession of it fifteen years afterwards, they extended and greatly strengthened its defences. In 1689 it was taken by Frederic III., elector of Brandenburg, after a three-months' siege; and in 1703 was captured by the duke of Marlborough, the operations of the siege having been conducted by the celebrated Marshal Coehorn. The fortifications were razed in 1717; and in 1777 Maximilian Frederic, elector of Cologne, founded the academy, which was enlarged into a university in 1784. This university was dissolved by the French, and remained in abeyance while they held Bonn in Napoleon's time, but was re-established upon a more extensive scale by the present king of Prussia, on the 18th October, 1818, the twenty-fourth article of the act of the congress of Vienna having transferred it to him as part of the provinces of the Rhine.

The town of Bonn has the Rhine for its eastern boundary: it is skirted on the south by the former electoral palace, and on the north and west by the Minster church, and a succession of gardens which stretch as far as the

banks of the river. It has at present the appearance rather of a modern than of an ancient town, and though it cannot be termed a well-built place, for several of the streets are narrow and ill-lighted, its appearance at a distance, with its white palace, now the university building, the steeples behind, and the gardens all round it, is cheerful and pleasing. The air is at times bleak and cold, in consequence of the currents occasioned by the heights that hang over its low site, which is placed at the point where the Rhine emerges from between those heights; the evaporation from the river also renders the atmosphere damp. Bonn forms a circular figure of nearly equal diameter from north to south and east to west: the distance from the Cologne to the Coblenz gate does not exceed ten or twelve minutes' moderate walk. It contains above 1100 houses, built in a substantial manner, twenty-nine public edifices, eight churches and chapels, nine mills and manufactories, five gates, and a population of about 12,000 (1789, 9560; 1800, 8533; 1811, 9167; 1823, 10,860; and 1828, 11,526), besides the garrison, and between 700 and 800 students. The inhabitants derive the principal means of their subsistence from the university, from their fields, gardens, and vineyards. The chief manufactures in the town are cottons, silks, and sulphuric acid. The buildings without the gate are on the increase, and so disposed, under the direction of a board of embellishment (*Versehnerungs-commission*), as to be ornamental to the town. Among the open areas the market-place is the most spacious; but the square planted with trees next the Minster, and thence called the Minster-square, is the finest. There is no public edifice in Bonn to be compared with the Minster or church of St. Cassius, an ancient Gothic structure, probably of the twelfth or thirteenth century. In the interior is a bronze statue of St. Helena, kneeling at the feet of the cross, as well as basso-relievi in white marble, representing the birth and baptism of the Saviour. In the church of St. Remigius, there is a fine altarpiece in oils, in which Spielberg the painter has represented the baptism of Clovis, king of the Franks, by the patron saint. The town-hall, which is on one side of the market-place, is a handsome edifice in the modern style, with a double flight of stone steps in front. Bonn has also a gymnasium; is the seat of the superior board of mines for the Rhenish possessions of Prussia, of two tribunals for civil and criminal affairs, and of a central department for taxes and crown revenues. Among other scientific associations it possesses an academy of naturalists, styled 'the Leopold-Caroline Academy' (which was first instituted at Schweinfurt in 1652, received extensive privileges from the emperors Leopold I. and Charles VII., was afterwards removed to Erlangen, and ultimately transferred to this place in 1818), and the society of the Lower Rhine for promoting the sciences of natural history and medicine. Upon the re-establishment of the university in the year 1818, Frederic-William, the present king of Prussia, appropriated the electoral palace at the southern end of the town to academical purposes; in the rescript under which it was reopened his majesty expresses his expectation that 'the university will proceed in the spirit of the act for its endowment, and promote true piety, sound learning, and wholesome morals among the youth resorting to it for study. It received the title of 'the Rhenish University of Frederic-William,' in the year 1828, and is composed of five faculties, Protestant theology, Roman Catholic theology, medicine, jurisprudence, and philosophy. There are attached to it forty professors in ordinary, and ten adjuncts (*ausserordentliche Professoren*), and four seminaries, viz., one for students of Protestant theology, and another for students of homiletic catechetical Protestant theology, a third for philological students, and a fourth for the natural sciences. It has a library of about 80,000 volumes, a medical institute for clinic, and another for poly-clinic, with which an establishment for the cure of invalid students is combined, a clinicum for surgery and diseases of the eye, another for obstetrics, an anatomical theatre and museum, a cabinet of surgical instruments, an agricultural institute, a botanical garden, a museum of natural history, geological collections, an apparatus for natural and experimental philosophy, a museum of antiquities, &c., and an observatory. At a distance of less than fifteen minutes walk from the town lies the country residence of the former electors of Cologne, Clemensrube, near the village of Poppelsdorf, which contains the collections in natural history, geology, &c., the chemical and

technological laboratory, the collections belonging to the Leopold-Caroline Academy, a gallery of paintings and engravings, and lecture-rooms, besides apartments for the accommodation or use of the officers and professors. The university opened in the autumn of 1818, with forty-five students; at the close of 1826 they amounted to 1002; at that of 1829, to 925; but the numbers at the end of 1834 had declined to 887. There are five elementary schools in the town, as well as a free-school for 300 poor children, several private cabinets of coins, engravings, &c., an excellent library of scientific publications and a mineralogical collection attached to the board of mining, and several benevolent institutions. The agricultural institute, with an area of 120 acres devoted to its purposes, and a manufactory of earthenware and pottery, are likewise situated at Poppelsdorf. Bonn lies in 50° 44' N. lat., and 9° 44' E. long.

BONNEFOY or **BONFIDIUS**, **EDMUND**, a writer on Oriental law, or law of the Eastern Empire, was born 20th October, 1536, at Chabeuil near Valence, in France. Having applied himself to the law, he was early appointed colleague to the celebrated Cujacius, in the chair of law, in the university of Valence, in which situation Cujacius thought so highly of his virtues, and also of his talents and acquirements, as in one of his works to declare that, were he on his death-bed, and asked, like Aristotle, to name his successor, he could name none but Bonnefoy. Bonnefoy was near being assassinated in the massacre of St. Bartholomew, and was only rescued from the fury of the people by his friend Cujacius. He then went to Geneva, where, having been appointed to a chair, he lectured three times a week on Oriental jurisprudence,—a chair for which he was eminently qualified by his knowledge of the languages, particularly Hebrew, Greek, and Latin. In 1573 he published '*Juris Orientalis libri tres, Imperatoris Constitutiones, &c.*' The Greek text was accompanied by a Latin translation by the author, and was meant to comprise the laws civil and ecclesiastical of the Eastern or Greek empire. The first book contains the constitutions of the emperors of the East, from Heraclius to Michael Paleologus; the second contains the decrees of the archbishops and patriarchs of Constantinople; and the third the decrees and letters of the other patriarchs and pontiffs. Bonnefoy died at Geneva, 8th February, 1574, being then about thirty-eight years of age. The historian De Thou, who studied under him, gives him an excellent character, calling him '*homo probus et simplex.*' (De Thou, *Hist. lib. 59*; Verdier, *Bibl. Française*, tom. vi.; Senebier, *Litt. Hist. de Genève*, tom. ii. p. 7; McCre's *Melo.*, vol. i. p. 45.)

BONNER, **EDMUND**, Bishop of London, died 1569. He was born at Hanley in Worcestershire, and according to tradition was the natural son of a priest named Savage by Elizabeth Frodsham, who afterwards married Edmund Bonner, a sawyer at Hanley. Strype, who wrote in 1721, asserts that he was the legitimate son of this Bonner, citing as his authority Baron Lechmon, whose ancestor had been an intimate friend and patron of the bishop. The opinion of Bonner's contemporaries was that Savage was his father. An epigram written on the picture of him in Fox's '*Acts and Monuments*' whipping Thomas Hinshaw, says,

*Nomen nec matris, nec gerit ille patris,
Qui patre Savage natus, falso que Bonerus
Dicitur: hunc melius dixeris Orbilium.*

In the year 1512 he was admitted a student at Pembroke College, Oxford (then Broad-Gate Hall), where in 1519 he took on two successive days the degrees of Bachelor of the Canon and Civil Laws, and he was ordained about the same time. In 1525 he was admitted to the degree of doctor, and had acquired a high reputation as a canonist, so that Cardinal Wolsey made him one of his chaplains and master of his faculties and jurisdictions. In consequence of these offices, Bonner was attending on the cardinal at Cawood, where the latter was arrested; and Stow mentions that, at the very moment when Sir John Walsh mounted his horse to proceed to Cawood with the king's warrant for Wolsey's arrest, the cardinal and his household were at dinner in the hall at Cawood, and his great cross fell on the head of Bonner and drew blood; wherewith Wolsey said, shaking his head, '*Malum omen*'; and saying grace, withdrew to his chamber; 'and so,' says Stow, '*this must needs be taken for a sign or token of that which followeth.*'

Soon afterwards we find Bonner chaplain to Henry VIII., incumbent of the livings of Blaydon and Cherry Burton in

Yorkshire, of Ripple in Worcestershire, and of East Dereham in Norfolk, and a prebendary of St. Paul's. Much of this promotion was due to the favour of Cromwell, whose schemes for the reformation of religion Bonner promoted. In 1533 he was sent a second time to the pope, who was then at Marseilles, to appeal to a general council against Clement's decree of excommunication against Henry VIII. on account of the divorce; and Burnet says that 'Bonner delivered the threatenings that he was ordered to make with so much vehemency and fury, that the pope talked of throwing him into a cauldron of melted lead, or burning him alive; and he, apprehending some danger, made his escape.' In 1538 he was made bishop of Hereford whilst he was on an embassy to Paris, and before his consecration he was translated to London and took his commission from the king in 1540.

Thus far Bonner not only concurred in, but zealously promoted the Reformation, and the separation from Rome. But when death had removed the despot whose ungovernable temper seems to have obtained submission even from men of virtue and of ordinary firmness, Bonner's compliance ceased; he protested against Cranmer's injunctions and homilies, and scrupled to take the oath of supremacy. For these offences he was committed to the Fleet, from which however upon submission he was soon after released. From this time Bonner was so negligent in all that related to the Reformation as to draw on himself, in two instances, the censure of the privy council; but as he had committed no offence which subjected him to prosecution, the council, according to the bad practice of those times, required him to do an act extraneous from his ordinary duties, knowing that he would be reluctant to perform it. They made him preach a sermon at Paul's Cross on four points. One of these Bonner omitted, and commissioners were accordingly appointed to try him, before whom he appeared seven days. At the end of October, 1549, he was committed to the Marshalsea, and deprived of his bishopric. What he said during his defence is characteristic of the man and of the times: 'Where I preached and affirmed the very true body and blood of our Saviour Jesus Christ to be in the sacrament of the altar the self-same in substance that was hanged and shed upon the cross, he (Hooper), like an ass (as he is an ass indeed), falsely changed and turned the word *that* into *as*, like an ass, saying that I had said as it hanged, and as it was shed upon the cross.' At another time he said to one of his accusers that he spake like a goose, and to another, that he spake like a woodcock.

After the death of Edward VI. Bonner was restored by Queen Mary. His first acts were to deprive the married priests in his diocese, 'and set up the mass in St. Paul's' before the queen's ordinance to that effect. It would be tedious to follow him in all the long list of executions for religion, which make the history of that reign a mere narrative of bloodshed. Fox enumerates 125 persons burnt in his diocese and through his agency during this reign; and a letter from him to Cardinal Pole (dated at Fulham, 26th December, 1556) is copied by Holinshed, in which Bonner justifies himself for proceeding to the condemnation of twenty-two heretics who had been sent up to him from Colchester. These persons were saved by the influence of Cardinal Pole, who checked Bonner's sanguinary activity.

When Queen Elizabeth succeeded to the throne, Bonner, with the other bishops, went to meet her at Highgate (19th November, 1558), 'who kneeling (says Stow) acknowledged their allegiance, which she very graciously accepted, giving to every of them her hand to kiss except Bishop Bonner, which she omitted for sundry severities in the time of his authority.'

In May, 1559, he was summoned before the privy council, and on the oath of supremacy being tendered, and his refusal to take it, he was deprived a second time of his bishopric and indicted for a præmunire. He escaped the penalties attached to this charge, but he was confined for the rest of his life to the Marshalsea, where he died on September 5th, 1569.

The public acts of Bonner's life sufficiently show the character of the man; but there are anecdotes of him which afford additional proof, if any were wanting, that a certain gaiety of temper is not inconsistent with cruelty. When he was taken to the Marshalsea from the council where the oath had been administered to him, a man exclaimed—'The Lord confound or else turn thy heart!' Bonner answered 'The Lord send thee to keep thy breath to cool thy porridge.'

After his deprivation a man called out to him—' Good morrow, Bishop quondam: ' Farewell,' answered he, ' knave semper.'

Burnet says of him that he little understood divinity, but was a great master of the canon law, wherein he was excelled by very few in his time.

Besides the authorities quoted above, Wood's 'Athens Oxonienses' and the 'Biographia Britannica' contain valuable notices of Bonner: the article in the latter is written with great care (Dr. Kippis's edition).

BONNET, a name applied, in permanent fortification, to a work consisting of two faces forming with each other a salient angle, on the plan. It was employed to cover the angle of a *ravelin* when the faces only of the latter were protected by *tenaillons* or *lunettes*: the fire from the bonnet defends the fronts and salient angles of the tenaillons, and the faces of the former work are reciprocally defended by those of the latter. [TENAILLON.] When the parapet about the salient angle of any work, as a bastion or ravelin, is raised above the general level of the faces of the work, the elevated part is now called a bonnet.

BONNET DE PRÉTRE was a term in field fortification, applied by the French engineers to an indented line of parapet having three salient points, on account of some supposed resemblance to the object from which it was named. [REDAN.]

BONNET/TABLE, or **BONNESTABLE**, a small town in France, in the department of Sarthe, on a cross-road from Mortagne and Bellême to Le Mans, 17 miles N.E. of Le Mans, the capital of the department, and 110 S.W. of Paris, through Dreux and Bellême: in 48° 10' N. lat., and 0° 24' E. long. It was formerly called Malestable, as affording insufficient accommodation for travellers; but the former lords of the town having made it more populous and more secure, by surrounding it with walls, changed its designation to its present more favourable one. (Piganiol de la Force.) There is a castle, built in the fifteenth century by Jean D'Harcourt, flanked by round towers. The inhabitants in 1832 amounted to 3872 for the town, or 5803 for the whole commune. They manufacture druggets, cotton goods, and hosiery: the market is well supplied with grain and cattle. The corn-market appears to have been considerable in the early part of the last century.

BONNY, a river which falls into the Bight of Biafra, between 5° and 4° 30' N. lat., and near 7° E. long. It was long considered a separate river, and is so represented on our maps. But it seems much more probable that it is one of the numerous branches into which the Quorra river divides on approaching the sea. At least it is certain that there is a water communication between it and the upper course of the Quorra. (*Journal of the London Geographical Society*, vol. ii.)

BONONCINI, GIOVANNI (a name which once rivalled Handel's, but is now chiefly known through the medium of Swift's epigram), was, according to conjecture, born about the year 1660 at Bologna, where his father, Giovanni-Maria, followed the profession of music, and in 1673 published a book, *Il Musico Practico*, from which we are inclined to infer that he was neither a very sound musician nor possessed of much good sense.

When the Italian opera, under the title of *The Corporation of the Royal Academy of Music*, was established in London by a party of nobility and gentry, who subscribed 50,000*l.* for the purpose, to which George I. as patron contributed 1000*l.*, the managers engaged Handel, then living at Cannons, Bononcini, who was sent for from Rome, and Ariosti, who came from Bologna, to compose for the theatre. Handel's productions displayed every great quality: Bononcini's were marked by tenderness and elegance, but wanted invention and vigour: Ariosti seems to have been a good musician without genius, whose name would soon have been consigned to oblivion but for his connexion with the other two. The first new work presented by the academy was *Musio Scavola*, of which Ariosti, the senior of the three, furnished the first act, Bononcini the second, and Handel, as youngest of the party, the third. The comparative merits of the two last composers were judged, not by critical rules, but party feelings. Handel was patronised by the king, his rival had the support of the Marlborough family; and, strange as the fact appears, Handel was the favourite of the Tories, Bononcini of the Whigs. The public generally however were on the side of the former, who gained a complete ascendancy and maintained it; but his

rival continued on the establishment till 1727, though he produced little, and then retired, after which he confined his services to the duchess of Marlborough, who had previously taken him into her family, and settled on him a pension of 500*l.* per annum. His imperious temper did not long permit him to enjoy his good fortune; and his dishonourable conduct in presenting to the Academy of Ancient Music a madrigal as his own, though the composition of Lotti of Venice, completed his downfall in this country, which he quitted in 1733. He then went to reside in Paris, where he wrote much sacred music for the Chapelle du Roi, and at the peace of Aix-la-Chapelle was invited to Vienna by the emperor, to compose music for the rejoicings on that occasion.

The exact period of his decease does not appear, but it is supposed that he almost attained his hundredth year. For the King's Theatre he composed several operas, now entirely forgotten; and in 1721 he published a volume of *Cantate e Duetti*, dedicated to George I., at a subscription of two guineas, by which it is calculated that he gained 1000*l.* These are engraved on copper, and the rank, as well as number, of the subscribers shows by what patronage Bononcini was at first supported.

BONNYCASTLE, JOHN, late professor of mathematics at the Royal Military Academy, Woolwich, where he died May 16, 1821. He was born at Whitchurch in Buckinghamshire, and came to London early, where he married at the age of nineteen. His wife dying soon after their marriage, he became tutor to the sons of a nobleman, after which he resided at Euston in Northamptonshire, till he obtained a place at the Woolwich Academy, where he finally became professor. These particulars are all that we find in the periodical publications of the time of his death. He is stated to have been a good scholar, and taught attached to poetry, particularly to Shakspeare.

Bonnycastle is known by a large number of excellent elementary works, which being still on sale, it is not necessary to enumerate. His 'Guide to Arithmetic' has long had a great circulation. His treatises on mensuration and astronomy are very good of their kind; but his 'Elements of Algebra' (not the abridgment, but the work in two volumes, octavo, 1813) is a very excellent performance, and shows great knowledge of the state of the science. He does not enter much into principles, but his management of the mechanism of algebra, and his almost singular felicity in separating the most striking and powerful parts from the rest, render his work very useful to the reader.

Bonnycastle passes for the translator of Bossut's 'History of Mathematics,' but a correspondent of the 'Gentleman's Magazine,' for 1821, p. 482, states, as of his own knowledge, that he only wrote the preface, and added the list of mathematicians at the end, the translation being by Mr. T. O. Churchill. His name however is prefixed to the work.

BONPLANDIA, a plant producing a kind of fever bark called *Angostura*. [GALIPHA.]

BONUS HENRICUS, a kind of weed, formerly supposed to possess medicinal properties. [CHENOPODIUM.]

BONZES is the name by which the priests of Buddha are usually designated in Japan. The form of the name in the Japanese language is *bonsan*, which word is supposed by Mr. B. H. Hodgson (*Journal of the Royal Asiatic Soc.* 1835, vol. ii. p. 293) to be a corruption of the Sanscrit *bandha* (*vandya*, 'laudable, deserving praise'?). They go with their heads entirely shorn, whence they are often ironically called *kami-naga*, or 'long-haired men.' The highest in rank is the daïri, or spiritual sovereign of Japan, who resides at Miaco. Till towards the conclusion of the twelfth century (A.D. 1185) the power of the daïri in Japan was nearly absolute; since then the supreme government has been vested in the djogoun, or secular commander-in-chief of the empire, and the influence of the daïri in temporal affairs is now next to none, though he still continues to enjoy the honours of a merely nominal sovereignty. (Tsitingsh, *Illustrations of Japan*, translated by F. Schobert, London, 1822, 4to. pp. 3, 300, 301.)

The Bonzes are under a vow of celibacy, and form a large corporation of male and female ecclesiastics. They are divided into two sects, hostile to each other, and externally distinguished by the colour of their robes, the one dressed in black and the other in grey. They maintain their influence chiefly by the popular belief in the efficacy of their intercession for others by prayer. Once in every fortnight they deliver a public religious discourse in the temples.

usually before numerous congregations. The Jesuit missionary, Gaspar Villela, who attended several public meetings of this kind, speaks in high terms of the eloquence of the preachers whom he heard, and of their impressive and dignified mode of delivery. Even the female Bonzes are said occasionally to preach.

The Japanese priesthood comprises individuals of all ranks of society. Persons of high birth, even the sons of kings, are known to have entered the order of Bonzes, but the majority belong to the lower and poorer classes. Many Bonzes earn their livelihood by superintending funerals. All claim it as the exclusive prerogative of their order to speak upon the religion of Buddha, the doctrines of which they will not allow to be touched upon by any one else. The principal moral precepts which they inculcate are five, viz.,—not to kill, not to steal, chastity, veracity, and abstinence from spirituous liquors.

There are convents for the male as well as for the female Bonzes, some of which have their own fixed annual revenues, while others are maintained by voluntary contributions from the people. The discipline enforced in these convents is described as rather strict. At different hours during the day the sounding of a bell summons the inmates to their common devotions. In the evening the prefect assigns to every one a special theme for his meditations. After midnight all assemble to sing hymns before the altar. Their meals they take in common, and those who conform strictly to the rule abstain from meat and fish, as well as from wine and all spirituous liquors. Some of the convents are said to contain large libraries.

There is a sect of Bonzes distinguished by the name Iko, the members of which are permitted to marry, but only those who are rich avail themselves of that privilege. [LAMAS and TALAPOINS.]

(Bern. Varenii, *Descriptio Regni Japonici*, Cantabrig. 1673, p. 149, seq.; Kämpfer, *Beschreibung von Japan*, vol. i. p. 251.)

BOOBY (zoology), the English name for a genus of Pelecanides, *Dysporus* of Illiger, *Morus* of Vieillot, *Les Fous* of the French, separated, with good reason, from the true pelicans by Brisson under the name of *Sula*.

The Boobies or Gannets are thus characterised:—the bill strong, longer than the head, conically elongated, very stout at the base, cleft beyond the eyes, compressed towards the point, which is slightly curved; edges of both mandibles somewhat serrated; nostrils basal, long, linear, almost hidden in the furrow of the bill; face and throat naked; feet short, robust, very much drawn up into the abdomen; three toes in front and one behind, short and articulated inwardly, all connected by a single membrane; the nail of the middle toe serrated; wings long, the first primary longest, or of equal length with the second; tail conical or wedge-shaped, composed of twelve feathers.

The term 'Booby' is more particularly applied by navigators to that species (*Sula fusca* of Brisson) which inhabits the desolate islands and coasts where the climate is warm or even temperate throughout the greater part of the globe. The apparent stupidity of the boobies is proverbial: calmly waiting to be knocked on the head as they sit on shore, or perching on the yard of a ship till the sailor climbs to their resting-places and takes them off with his hand, they fall an easy prey to the most artless bird-catcher. Even Byron's shipwrecked wretches, though

'Stagnant on the sea
They lay like careases.'

'caught two boobies and a noddy; and the incident actually did occur in Bligh's celebrated boat-voyage, consequent on the mutiny on board the *Bounty*, when he and his boat's crew were in a most deplorable state.

'Monday, the 25th,' says Bligh, 'at noon, some noddies came so near to us that one of them was caught by hand. * * In the evening, several boobies flying very near to us, we had the good fortune to catch one of them. * * I directed the bird to be killed for supper, and the blood to be given to three of the people who were the most distressed for want of food. The body, with the entrails, beak, and feet, I divided into eighteen shares. * * * Tuesday, the 26th. In the morning we caught another booby, so that Providence appeared to be relieving our wants in an extraordinary manner. The people were overjoyed at the addition to their dinner, which was distributed in the same manner as on the

* Montage says that the Gannet, *Sula leucogaster*, has no nostrils.

preceding evening, giving the blood to those who were the most in want of food.'

Dampier says that in the Alcrane Islands (Alacranes), on the coast of Yucatan, the crowds of these birds were so great that he could not pass their haunts without being incommoded by their pecking. He observed that they were ranged in pairs, and conjectured that they were male and female. He succeeded in making some fly away by the blows he bestowed on them, but the greater part remained in spite of his efforts to compel them to take flight. De Gennes, in his voyage to the Straits of Magalhaens, says, that in the Island of Ascension there were such quantities of boobies, that the sailors killed five or six at a time with one blow of a stick. The Vicomte de Querhoent says that the French soldiers killed an immense quantity at this same island, and that their loud cries when disturbed at night were quite overpowering.

This apparent exception to the general rule of self-preserving instinct is so remarkable, that we are led to look for some cause, and perhaps this is to be found in the structure of the animal; for, according to many writers whose veracity cannot be questioned, the boobies stay to be taken and killed after they have become familiar with the effect produced by the blows or shot of their persecutors. In the case of most other animals which, from not knowing his power, have suffered man to approach them to their destruction, alarm has been soon taken, the idea of danger has been speedily associated with his appearance, and safety has been sought in flight; but the wings of the booby are so long and its legs so short, that, when once at rest on level ground, the bird has great difficulty in bringing the former into action, and, when so surprised, it has no resource but to put on a show of resistance with its beak, which is, to be sure, generally despised by the aggressor.

In the cases recorded by Bligh, the birds were probably fatigued by wandering too far from the rocky shores, which are their ordinary haunts. There they are generally to be seen constantly on the wing over the waves which beat at the foot of the crags, intent on fishing. Though so well furnished with oars, they are said to swim but seldom, and never to dive. Their mode of taking their prey is by dashing down from on high with unerring aim upon those fishes which frequent the surface, and instantly rising again into the air. They walk with difficulty, and, when at rest on land, their attitude is nearly vertical, and they lean on the stiff feathers of the tail, like the cormorants, as a third point of support. The ledges of rocks or cliffs covered with herbage are the places generally selected for the nest, and there, in great companies, they lay their eggs, each hen bird depositing from two to three. The young birds, for some days after their exclusion, are covered with a down so long and thick, that they resemble powder puffs made of swan's down.

The boobies seldom wander more than twenty leagues from land, to which they usually return every evening, and their appearance is considered by mariners as a sure token of their vicinity to some island or coast.

GANNETS OR BOOBIES OF WARM CLIMATES.

The state of our information as to this division of the genus is by no means satisfactory; for the species are not well determined. As an example, we may take the bird above alluded to, *Sula fusca* of Brisson and others, *Pelecanus Sula* of Linnæus, *Le Fou brun* of the French, the *Booby* of Sloane and Ray.

The colour of this species is blackish-brown or ashy-brown above and whitish beneath; the primaries are black, and the naked skin about the face is reddish; the orbits and base of the bill are yellow, and the point of the bill is brown; the legs are of a straw colour.

In length the brown booby is about two feet five inches, the bill measuring four and a half inches or thereabout and the tail ten: the young birds are spotted with white and brown.

It is almost impossible to open the pages of the old voyagers who have fallen in with these boobies without finding some entertaining accounts of the constant persecution to which the latter are subjected by the frigates or man-of-war birds. [FRIGATE.] Lesson, indeed, doubts this. He says, 'the boobies have been so named because it has been supposed that the frigates compelled them to disgorge the fish which they had taken; but this appears to us to be

erroneous. The booby is warlike, he lives fearlessly near the frigate, and swallows the fish which he has captured in peace. Buffon, Cuvier, and Temminck, on the contrary, evidently give credence to the narratives of the frigate persecution, and indeed it is difficult to believe that so many eye-witnesses should be mistaken.

Feuillée says, 'I have had the pleasure of seeing the frigates give chase to the boobies. When they return in bands towards evening from their fishing, the frigates are in waiting, and dashing upon them compel them all to cry for succour, as it were, and, in crying, to disgorge some of the fish which they are carrying to their young ones. Thus do the frigates profit by the fishing of the boobies, which they then leave to pursue their route.' Leguat, in his voyage, thus writes: 'The boobies come to repose at night upon the Island Rodriguez,* and the frigates, which are large birds, so called from their lightness and speed in sailing through the air, wait for the boobies every evening on the tops of the trees. They rise on the approach of the latter very high in the air and dash down upon them like a falcon on his prey, not to kill them but to make them disgorge. The booby, struck in this manner by the frigate, gives up his fish, which the frigate catches in the air. The booby often shrieks and shows his unwillingness to abandon his prey, but the frigate mocks at his cries, and rising, dashes down upon him anew till he has compelled the booby to obey.' William Dampier observes that he remarked that the man-of-war birds and the boobies always left sentinels near their young ones, especially while the old birds were gone to sea on their fishing expeditions; and that there were a great number of sick or crippled man-of-war birds which appeared to be no longer in a state to go out for provision. They dwelt not with the rest of their species, and whether they were excluded from their society or had separated themselves voluntarily, they were dispersed in various places waiting apparently for an opportunity of pillage.† He adds, that one day he saw more than twenty on one of the islands (the Alcranes), which from time to time made sorties to procure booty. The man-of-war bird that surprised a young booby without its guard gave it a great peck upon the back to make it disgorge (which it instantly did) a fish or two as big as one's wrist, which the old man-of-war bird quickly swallowed. He further speaks of the persecution of the parent boobies by the able-bodied frigates, and says that he himself saw a frigate fly right against a booby and with one blow of its bill make the booby give up



[Sula fusca.]

* These may have been the species known in the island by the name of *Garcus laruf*, apparently referrible to *Sula candida*, Brisson, and *Pelecanus Haccator*, Linn.—*Soc. Zool. Proc.*, 1833, p. 32.
† Nuttall observes that these separatists were probably the males after incubation.

a fish just swallowed, upon which the frigate darted with such celerity that he seized it before it reached the water. Catesby and others mention similar encounters. Nuttall says, 'the boobies have a domestic enemy more steady, though less sanguine in his persecutions, than man; this is the frigate pelican or man-of-war bird, who with a keen eye descriing his humble vassal at a distance, pursues him without intermission, and obliges him by blows with its wings and bill to surrender his finny prey, which the pirate instantly seizes and swallows. * * * The booby utters a loud cry, something in sound betwixt that of the raven and the goose; and this quailing is heard more particularly when they are pursued by the frigate, or, when assembled together, they happen to be seized by any sudden panic.'

Their nests, according to Dampier, are built in trees on the isle of Aves, though they have been observed in other places to nestle on the ground. They always associate in numbers in the same spot, and lay one or two eggs. The young are covered with a very soft and white down. Nuttall says that they abound on rocky islets off the coast of Cayenne, and along the shores of New Spain and Caracas, as well as in Brazil and on the Bahamas, where they are said to breed almost every month in the year. In summer he adds, they are not uncommon on the coasts of the Southern States. The flesh he describes as black and unwhoury.

GANNETS OR BOOBIES OF COMPARATIVELY COLD CLIMATES.

The Gannet of the English; the *Solan* Goose*, or *Solan-Goose*, of the Scotch and English; *Sula* of the French; seems to be the only recorded species of this division. This bird is the *Fou de Bassan* and *Oie de Bassan* of the French; the *Solend-Ganss*, or *Schotten-Ganss*, of the Germans; *Jaen van Gent* of the Dutch; *Gan* and *Gans* of the ancient British; *Der Bassanische Pelikan* of Bechstein; *Weisser Tolpel* of Meyer; *Le grand Fou* and *Le Fou tacheté* of Buffon; *Anser Bassanus* of Sibbald, Gesner, and others; and *Anser Scoticus*, *Sula Bassana*, and *Sula Major* of Brisson; *Sula Hoteri* of Clusius; *Sula alba* of Meyer; *Pelecanus Bassanus* of Linnæus; *Pelecanus Bassanus* and *P. maculatus* of Gmelin; and *Gannet Corvorant* of Pennant.

Its geographical distribution may be stated, as a general proposition, to be over the arctic regions of the old and new world, for it is one of those marine birds which is found on each side of the Atlantic, though in its migrations for it is said to have been seen plunging for sardines as low as the mouth of the Tagus. In Europe the strongholds of the *solan-geese* seem to be in Norway and the Hebrides. *S. Kilda*, and the Bass in the Firth of Forth, are favourite haunts. Pennant observed their northern migrations in Caithness, and says they were passing the whole day in flocks of from five to fifteen each. They appear migratory on the shores of Holland, and are seen on the coast of Cornwall at the end of the summer, arriving with the porpoises, and disappearing with them about the end of November, according to Pennant; but Montagu observes that they have been frequently seen in the English Channel during the winter, and as late as the month of April. In Iceland they breed, and are numerous; and they are occasionally seen in Greenland. They are found on the coast of Newfoundland, and they are common on the north-west coast of America. In the summer they are extremely abundant on some rocky islands in the bay of St. Lawrence, and not uncommon on the coasts of the United States, especially to the south of Cape Hatteras. On the south side of Long Island and the neighbouring coast they are seen in numbers in the month of October, associating with the *velvet ducks* and *scoters*†. Bonaparte (Prince of Musignano) notes it as rare and occasional at Philadelphia.

To give the reader some idea of the multitudes of these birds, we will select one or two accounts from the many that might be quoted. The surface of the Bass island, according to Dr Harvey, is almost entirely covered in the months of May and June with their nests, eggs, and young, so that it is scarcely possible to walk without treading on them. When in flight they overshadow like clouds, and make such a stunning noise, that it is scarcely possible to hear your next neighbour. The sea all around is covered with them, and

* Martin says that 'solan' is derived from an Irish word expressive of quickness of sight, a quality for which the *solan-geese* is remarkable.
† Nuttall—N. B. Bewick states that they are said to be met with in numbers about New Holland and New Zealand, but he gives no authority.

the flocks in the distance can only be compared to vast swarms of bees. Martin states that the inhabitants of the small island of St. Kilda consume annually upwards of 22,000 young birds of this species, in addition to an immense quantity of their eggs, which form their principal support*. The same author says that at the small isle of Borea the heavens were darkened by those flying overhead, and that their excrements were in such quantity, that they gave a tincture to the sea, and at the same time sullied the boat and clothes of the party. The Gannet Rock in the Bay of the St. Lawrence is about 400 feet in height, and of several acres in extent on the summit. On the 8th of June, according to Audubon, this rock was covered with innumerable gannets upon their nests, so crowded or closely arranged as to give the appearance of a huge mass of snow, while the hovering crowds seen around that inaccessible marine mountain forcibly presented at a distance the appearance of a snow-storm.

Before we enter into a description of the habits of the gannet, it may not be uninteresting to give a sketch of its organization, which is somewhat peculiar, and admirably adapted to promote the buoyancy of the bird and the rapidity of its descent on its prey. Montagu's observations on this part of its economy (the situation and connection of the air-cells, see Supplement to *Ornithological Dictionary*, article 'Gannet') are very interesting, but as the researches of Owen and Yarrell differ in some particulars from his, it will be sufficient to refer to the former; and we proceed to give Mr. Owen's notes of the examination of a gannet that died in the garden of the Zoological Society of London in 1831. It will be seen, on reference to Montagu's statement, that he says 'by reason of some valvular contrivance, the skin could not be artificially inflated through the lungs.'*** 'It is also clear that there is no direct communication between the sides.'

'In the examination,' writes Owen in the Proceedings of the Zoological Society, 'our attention was chiefly directed to the air-cells, which, in this bird, as in the pelican, have a most extensive distribution. We commenced by a gentle but continued inflation through the trachea, a pipe having been introduced into the upper larynx: in a short time the integuments of the whole of the lateral and inferior parts of the body rose, and the air-cells seemed completely filled, especially that which is situated in front of the os furciforme. Being thus satisfied that they all had a free communication with the chest, we next proceeded to see at what points these communications took place, and in what degree the air-cells communicated with each other. For that purpose the air-cells on the left side of the body were laid open, and, shortly after, those of the opposite side collapsed, indicating the existence of apertures of communication, although the septum which ran along the middle line of the body appeared at first sight imperforate. There was a free communication between the lateral air-cells of the same side of the body from the os furciforme to the side of the pelvis; but the air-cell in front of the os furciforme remained still tensely inflated. The lateral air-cells had a free communication with the cavity of the chest at the axilla, at which part the air had entered these cells during the inflation. The pectoral muscles and those of the thigh presented a singular appearance, being, as it were, cleanly dissected, having the air extended above and below them; the axillary vessels and nerves also passing bare and unsupported by any surrounding substance through these cavities. We traced the air-cells down the side of the humerus, ulna, and metacarpal bone, into all of which the air entered, and even into the bone corresponding to the first phalanx, which agrees with what Mr. Hunter has described of the pelican (*Animal Econ.* p. 92). As none of these proceedings had any effect on the air-cell in front of the os furciforme, which still continued distended, it was evident that inflation by the humerus could not have filled it except through the medium of the lungs themselves. We next proceeded to detach the integument from this air-cell to see its shape and extent: this required to be done with great care, as it adhered pretty closely to the skin and roots of the feathers; it was of a globular form, about four inches in diameter, and communicated with the thorax at its anterior aperture below the trachea. Numerous strips of muscular fibres passed from various parts of the surface of the body, and were firmly

* Some idea of their voracity and numbers may be formed from the assertion of Buchanan, who, in his 'View of the Fishery of Great Britain,' conjectures that the gannets of St. Kilda destroy annually one hundred and five millions of herrings.

attached to the skin; a beautiful fan-shaped muscle was also spread over the external surface of the air-cell anterior to the os furciforme. The use of these muscles appeared to be to produce instantaneous expulsion of the air from these external cells, and by thus increasing the specific gravity of the bird, to enable it to descend with the rapidity necessary to the capture of a living prey while swimming near the surface of the water.'

This is a beautiful adaptation of means to an end. The descent of the bird on its prey has been not unsaply compared to that of an arrow, the beak of the bird forming the arrow-head, and the body and wings the feathered shaft of the weapon: we here have the secret of its heavy fall; the same machinery restores the buoyancy at the proper moment, and the bird rises with its fish aloft.

Some idea will be formed of the rate of the gannet's descent from the following authentic anecdote recorded by Pennant:—'About four years ago* one of these birds flying over Penzance (a thing that rarely happens†), and seeing some pilchards lying on a fir-plank in a cellar used for curing fish, darted itself down with such violence, that it struck its bill quite through the board (about an inch and a quarter thick) and broke its neck.' To this Pennant adds that these birds are sometimes taken at sea by a deception of the like kind. The fishermen fasten a pilchard to a board and leave it floating, and the gannet is decoyed to its own destruction. Peter Pindar has immortalized this mode of booby-catching in those droll lines with which our readers are doubtless familiar.

There are some parts of Aristotle's description of his *καταρρακτες* (catarractes) (*Hist. Anim.* ii. 17. ix. 12.) that suit well with our birds, and the very name accords with its habits. Bochart and Michaelis both leave the question in doubt, and Camus leans to the opinion that it is a gull (*Larus Catarractes*, Linn.); but no gull precipitates itself into the sea with the violent plunge described by Aristotle (ix. 12).

Pennant hints that in the cataracta of Juba (Pliny. x. 44) some characters of the gannet may be found.

The bird hardly deserves the reputation which its alliance with the other boobies has in some places procured for it. Its habits and its struggles for liberty show that the self-preserving instinct is as strong as in other birds except at the breeding season, when every other feeling seems to be merged in the ardour of incubation. Thus it has been stated that some of their number always keep watch at night, and that the sentinel, by varying his intonation, apprizes the flock of the approach of danger. The specimen sent by Dr. Borlase to Pennant was killed at Chandour, near Mountbay, but not till after a long struggle with a water-spaniel, assisted by the boatmen, for it was strong and pugnacious. 'The person who took it,' adds the doctor, 'observed that it had a transparent membrane‡ under the eyelid, with which it covered at pleasure the whole eye, without obscuring the sight or shutting the eyelid; a gracious provision for the security of the eyes of so weighty a creature, whose method of taking its prey is by darting headlong on it from a height of a hundred and fifty feet or more into the water.'

The organization above alluded to gives the gannet great buoyancy when swimming, and it swims high like a gull. When one which Montagu kept alive was placed on the water of a pond, nothing could induce it to attempt to dive; and from the manner of its putting the bill and sometimes the whole head under water, as if searching for fish, it appeared to Montagu that the prey is frequently taken in this manner.

Withered grasses and sea-weeds, 'bleached by many a sun and shower,' form the nest, which is placed on the ledges of the overhanging precipice, or in the fissures on the rock. Martin says that they frequently rob each other and that one which had pillaged a nest flew out towards the sea with the spoil, and returned again as if it had gathered the stuff from a different quarter; but the owner, though at a distance from his nest, had observed the robbery, and waited the return of the thief, which he attacked with the utmost fury. 'This bloody battle,' adds the narrator, 'was fought above our heads, and proved fatal to the thief, who fell dead so near our boat that our men took him up, and presently dressed and ate him.'

* From a date in the letter of Dr. Borlase, to whom it appears that Pennant was indebted for his communication, the time alluded to must have been somewhere about 1758.

† The gannets are supposed generally to fly coastwise.

‡ The nictitating membrane. [BIBBS.]

The number of eggs are stated at one, two, or even three, if the two first laid are taken. Temminck gives two as the number others three, where none have been abstracted. They are white, equally pointed at each end, rough on the surface, and less than those of a goose. These birds sit close together. It is said that the male and female hatch and fish by turns, and that the fisher comes back to the nest with five or six herrings in its gorget, all entire and undigested, which the hatcher pulls out from the throat of its provider and swallows, making at the same time a loud noise.

The young birds are a favourite dish with the North Britons, and Pennant observes that, during the season, they are constantly brought from the Bass Isle to Edinburgh, where they are sold roasted, and served up as a whet. Our readers will remember that 'the relishing Solan goose, whose smell is so powerful that he is never cooked within doors,' formed a part of Mr. Oldbuck's dinner, though the state in which the 'odoriferous offering' was presented excited the antiquary's just indignation.

The proprietor of the Bass is said to derive a considerable profit by taking the young and sending them to market, and by an old Scottish law he has a right, it is said, to visit the neighbouring isles and drive away his wandering gannets to his own domain.

The variations in the plumage of the gannet are very great, and, as in the instances of many other birds, the changes have given rise to the record of species which have no foundation but the natural alteration in the feathery covering.

Old birds at the age of three years. Summit of the head and occiput of a clear ochreous yellow. The rest of the plumage milk-white, with the exception of the quills and the bastard wing, which are black. Bill of an ashy blue* at the base, but white at the point. Naked membrane surrounding the eyes bluish, and that which forms the prolongation of the opening of the bill† and extends to the middle of the throat, dusky blue. Iris yellow. Legs dusky, in front bluish-yellow (Temminck says clear green); connecting membrane of the forward toes very strong, and nearly as transparent as glass (Temminck says blackish). Nails white. Tail cuneiform, or wedge-shaped. The two exterior quills have the end of the barbs truncated, according to Temminck. Length two feet seven to two feet nine inches. The female is less than the male.

Young, a few days after their exclusion from the egg. The covering is a white and lustrous down, making the nestlings look like powder-puffs.



[Sula Bassana. Old male.]

* When the bird is alive the bill is of a bright bluish-grey.

† Near the base of the upper mandible is a sharp process and suture, which enables the bird to move it a little in the act of swallowing a large fish.

First year. All the plumage of the upper parts spotless, blackish-brown. Lower parts brown varied with ash-colour. Bill, naked parts, and iris brown. The tail rounded.

One year old, or second moult. Head, neck, and breast of an ashy brown, covered with small lanceolated white spots very closely approximated. Feathers of the back, rump, and wings of the same colour, and marked with spots of the same kind but more distant from each other. Lower parts whitish, varied with ashy brown. Tail and quills brown. The first conical with white shafts. Bill ashy brown, but whitish towards the point. Naked parts of a bluish-brown. Iris yellowish. Front of legs and upper part of toes greenish-brown. Membranes of an ashy brown. Nails whitish.

Two years old, and during the moult. At this age the bird is already partially covered with white feathers, while the rest of the plumage is still brown and spotted with white. The young of the age of one and two years are the *Sula major* of Brisson, *Pelecanus maculatus* of Gmelin, *Le Grand Fou* and *Le Fou tacheté* of Buffon, and the *Graves* and *Spotted Booby* (the head of which is given by Catesby) of Latham.*

BOOK-KEEPING. Book-keeping is that art by which all the transactions of commerce are so methodically recorded as to exhibit a perfect picture of a merchant's affairs.

When we consider that property embarked in commerce is in a state of constant flux, by which it undergoes perpetual transformations, and reflect upon the intricate nature of many mercantile operations, especially those arising out of joint adventures and foreign exchanges, we cannot hesitate to admire the ingenious though unknown contriver of a system which enables the merchant not only to register with clearness every fact touching his estate, but to ascertain with certainty the results of all those facts whenever he chooses to collect them together.

As an art it is not easy to overrate its value. The wonder indeed is, that both in and out of trade there are any persons who are insensible to its importance. To every man engaged in business the utmost accuracy of accounts is essential, and yet it is notorious that in this great trading community the practice of book-keeping, particularly among retailers, is extremely loose and unsatisfactory.

As an invention book-keeping is undoubtedly modern being with great probability referred to the fifteenth century. Venice is said to be its birth-place, and the first known author was Lucas de Burgo, who published in 1475 a regular treatise in the Italian language. France, England, Italy, and Germany, have subsequently produced a great variety of works, in all of which the true principle is laid down with sufficient perspicuity; but students in search of serviceable instruction should consult the most recent authors, who, being either practical men themselves, or in close communication with those who were so, have greatly simplified the plans of their predecessors, and by adapting successive expedients to the real exigencies of trade, have introduced a high degree of elegance and neatness into their methods, combining accuracy with expedition and brevity with clearness and completeness, which is the very perfection of the art.

In order to accomplish these objects, every event affecting the property must be recorded in such a manner as to show in the simplest form and with the utmost perspicuity all the essentials of each transaction, that is to say, the subject-matter of it, the day of its occurrence, the person on whose account and the person with whom it takes place, together with the mode of its performance.

It is evident that in very large concerns there must be always a tendency to intricacy and confusion, where concurrent operations are in constant progress, and circumstances of great variety are crowded into a short space of time. Malcolm, who published his 'New Treatise' at Edinburgh in 1718, is therefore justified in declaring it to be a work of no small skill and labour to evolve out of this confusion the lucid statement which a perfect balance-sheet presents. Yet it is in large concerns, generally speaking, that fulness and facility are to be found, because the conductors, strongly impressed with the ruinous consequences of obscurity, take effectual means to guard against it by maintaining an establishment and a system commensurate with the extent of their business. The principle of book-keeping is of such inflexible rigour, that it never admits of relaxation under any conceivable circumstances, although a

Temminck

adapt itself with equal facility to every possible matter of account.

With regard to the particular plans which ought to be put in practice by individuals it would be vain to enter into minute directions, since every person engaged in trade is in some respects situated differently from every one else, and if the general principle is understood and kept in view, details may be safely trusted to experience. It will be more useful to lay down general rules in such a way as to answer the double purpose of illustrating the true character of perfect book-keeping, and of affording a guide to those who may have occasion to construct a set of books for any particular undertaking.

The outline of the art of book-keeping may be conveniently sketched by the words 'Inwards,' 'Outwards,' 'On Hand.'

Everything brought into the concern, either at its origination or in subsequent dealings, is, of course, property 'Inwards,' but the generic term 'Property' must, in respect to book-keeping, be subdivided into as many species as the nature of the particular business requires. The broad subdivision is into Cash—Bills—Book-debts—Stock, and, in conformity with it, every regular house of business keeps a separate place for the registry of all its transactions under one or other of these heads.

The cash-book is perfectly simple in its frame, containing on the left hand page separate spaces for the date—the person who has brought any cash 'Inwards,' and the exact sum, all ranged in a horizontal line. These sums are placed one under another, so as to be easily cast up in a column, at the side of which runs a second column shewing the folio where the amount of each entry has been carried forward into another book to the credit of each payer respectively. On the right-hand page provision is made in the ruling for the same particulars, in the same arrangement, respecting cash paid 'Outwards,' with a posting column also to show where each entry has passed onward to the debit of the receiver.

Solomon, according to the city proverb, was a wise man and Sampson was a strong man, but neither could pay away money that he had never received. It follows as an undeniable consequence that the left-hand side of a cash-book, correctly kept, can never amount to a less sum than the right-hand side. The difference, if any, of the totals will so accurately point out the balance remaining on hand, that, should any discrepancy appear, the book-keeper has, in that circumstance, a convincing proof of error, and instantly addresses himself to its discovery.

The cash-book being familiar to the generality of persons, is best fitted for exemplification, but, in truth, every account, when well kept, is equally simple and exhibits the very same features. An account, whether of persons or things, in the book-keeping sense of the term, is a chronological collection of all the events by which the property of a concern has been affected by the person or thing in question, the events 'Inwards' being ranged on one side and confronted with the events 'Outwards' on the other side. The book-keeper is therefore historiographer of the property.

Bills, which form the second head of subdivision, are either receivable or payable, and each description requires a book to itself. They act upon the concern in directly opposite ways, bills receivable being one of the avenues through which debts are collected from the world, and bills payable being one of the channels through which the concern discharges its obligations. From this consideration it is clear that the identical bill, which the acceptor enters in his books as a bill payable, appears as a bill receivable in the books of the party for whom he accepts it, and this circumstance elucidates the nature of book-keeping in general, since what is true of bills is equally true of all other transactions. The same indentation takes place universally, so that if two men accurately record their mutual dealings their books must be counterparts of each other, exactly dovetailed at every point of their connexion. It sometimes happens that a man's own acceptance is remitted to him, in which case the same piece of paper is entered both as bill payable and bill receivable. The bills-receivable book should contain spaces for all particulars, both inherent and relative. Those inherent in the bill itself are,—the drawer—his residence—to whom payable—on whom drawn—where payable—date—time—when due—amount.

The relative or contingent particulars are,—when received—from whom—on whose account—folio where credited in

another book—when and to whom paid away—folio where debited in another book.

On the Continent it is customary with those who negotiate foreign bills to copy into their bill-book the names of all endorsers. With inland bills such minuteness is not so necessary, and is a practice never observed.

The bills-payable book contains the same inherent particulars, except the name of the drawee, which is in fact the concern itself. The relative circumstances are also recorded, but in a reverse order, to correspond with the opposite character of the transaction. Both books are furnished with a column for a running series of numbers, written also on the face of each bill respectively, by which means it is pointedly referred to in subsequent entries, and readily identified when occasion arises.

Book debts are personal demands for which no acceptances have been given. The record of each sale being originally made in a sold day-book, with full particulars as to quantities and prices, the sum is carried forward into a ledger to the debit of the buyers, who are respectively charged under their names with the value delivered to them, each account having a distinct folio or division to itself. This constitutes a list of 'debts receivable,' and is called the sold ledger.

The bought ledger, on the contrary, exhibits a list of 'debts payable,' digested under the names of persons from whom goods have been received into the concern, and is founded upon entries, with full particulars, in a book kept for the purpose called 'invoices inwards,' or 'bought day-book.'

The remaining subdivision is stock, a term loosely employed, sometimes to signify all the property possessed by a concern and sometimes the surplus property—more strictly called capital—in the concern, after deducting every obligation. Its more definite sense is limited to goods of all descriptions bought or manufactured with a view to profit.

With regard to stock, it cannot be denied that its incomings and outgoings are exactly as much entitled to a regular record as any other portion of the property, since that which is stock to-day may become book-debt to-morrow, take the shape of bills receivable the next day, and in course of time form part of the balance at the banker's. There can be no reason whatever why the banker's account, the bills receivable, and the sold ledger, should be carefully kept, which does not apply with equal force to the stock account. The method here, as everywhere else throughout the entire range of book-keeping, is simple. Each description of goods, bought or made, should have a place of its own, either a book or a page as the case may require, for an accurate register of the dates and quantities 'inwards,' on the left hand, confronted with the dates and quantities 'outwards,' whether the delivery 'outward' take place to a buyer or only from one department to another within the concern. For example, in a brewery the account of malt should show the quantity deposited in the malt-room confronted with the quantity taken out of the malt-room, so as to give the balance of malt on hand by deducting the smaller from the larger total, exactly as in the instance of the cash-book.

One of the fundamental and indispensable laws in perfect book-keeping is that every discharge must be specific. When the account is with persons, the discharge answers in value to the charge; but when the account is of things, the discharge must answer in kind.

Thus if a brewer receives inwards 1000 quarters of malt his books are not perfect unless they tell him specifically how that quantity was disposed of. By charging to the buyers the quantity resold, and charging to the account of his own mash-tub the quantity actually put into it, he gives himself the means, and the only means, of knowing whether he has had the full benefit of all his malt; and if he finds a deficiency, he can instantly address himself to the discovery of the cause, just as he would have done if his cash had been deficient.

There is one mischievous error in some of the more ancient treatises, against the misleading influence of which the youthful student should be effectually guarded. It is sometimes stated that among the devices of book-keeping imaginary accounts are raised. Nothing can be further from the truth. The book-keeper, if he understands his duty and adheres to it, knows well that the imagination would be altogether out of place, and plods his way from fact to fact, with painstaking perseverance, using his utmost

care to prevent the admission of whatever is false, and the omission of any fact bearing upon the property.

It is customary, even in modern treatises intended for the use of schools, to divide book-keeping into two kinds, under the names of double entry and single entry. This fallacious representation of so important a subject cannot be too speedily exploded, as there is reason to think that the absence of system, so prevalent in the book-keeping of retail traders and professional men, may be ascribed to this original vice in their education.

There is this in common between the two, that the transactions, as they occur in business, may be primarily registered in the same way by both methods—that is to say—single entry has its cash-book, its bill-book, its day-book, and its ledger, for personal accounts; but even in these, so completely is the caprice of the book-keeper free from the control of principle, that matters the most distinct in their nature are frequently jumbled together, bills receivable and stock being confused with cash, and the day-book being perverted, from its only proper purpose, into a receptacle for all sorts of incongruous transactions.

But here the similarity ends, and here begins the superiority in power and beauty of double entry, historically called the Italian method.

That method, grounding itself upon the scientific axiom that 'the whole is equal to the sum of all its parts,' is satisfied with nothing less than a perfect equilibrium between the total amount of all the debtor accounts on one side, compared with the total amount of all the creditor accounts on the other side. It arrives at this ultimate result by exacting, at every step of its progress, the same equilibrium between debtor and creditor in each entry; and by suffering no event either inwards, internal, or outwards, to take place without a self-balancing entry, it secures at last its great object of presenting a perfect picture whenever all these separate parts are collected together as a whole.

It effects this purpose by resorting to every original entry, whether that entry relates to the delivery of goods inwards or outwards, or to cash, or to bills, or to wages, salaries, brokerages, insurances, del credere commissions, or to any of the numerous labours of body or mind which constitute the ground of debt from one man to another. For these original entries too many treatises unskillfully refer the learner to one general waste-book; but the true theory of a waste-book is, that it is that book where the first entry of a fact is made in the handwriting of the person who was cognizant of that fact; and to preserve the chain of responsibility unbroken throughout any establishment, it is an excellent regulation to make each person answerable, by means of his own handwriting, for the accurate record of all events within his own department. In this corrected view, the cash-book is the waste-book for cash, the bill-book is the waste-book for bills, the day-book is the waste-book for goods, and so on through all the original books.

In double entry these original particulars are digested into various heads of account, without the omission of a single event.

The act of digesting these original entries is technically called Journalizing, because they are collected together in a book called The Journal, where they for the first time put off their individuality, and are massed together according to some rule of affinity previously established in the mind of the book-keeper, who is held to this indispensable condition, that he must raise exactly as much *matter of account* to the debit as to the credit.

The distinction between single and double entry becomes apparent in the different ways in which they dispose of the very same facts. Thus, suppose the book-keeper by double entry to be occupied with the invoices inwards, and to find that since he made his last Journal entry from that book, his employer has contracted debts amounting in the whole to 3690*l.* 18*s.* 4*d.* By the contrivance of journalizing, the book-keeper not only states this total, and assigns the amount due to each creditor, but he charges also the *same total* to one or more debtors, asking himself in each instance the particular reason why each debt has been contracted, and charging the amount of it to that *reason*; or, in other words, he considers the sources from which his employers must seek a return of their outlay, and charges the due quantity to each source.

To avoid multiplicity, let us suppose three causes to have given rise to this amount of debt, and these three causes to have been, the purchase of *Iron*, the repair of *Premises*, and

the supply of provender to the *Stables*. It is evident that each of these causes differs from the other two in its nature, and at the annual summing up it is of great importance to distinguish them in the accounts. The first cause is the purchase of an article for sale or manufacture. The second is a permanent addition to the cost and value of the place. The third is one of the expenses of trade. Double entry requires and provides for the statement of this important distinction. Single entry indolently or ignorantly satisfies itself with carrying to the personal credit of the parties the amounts respectively due to them, omitting altogether a separate record of the *reason* why the debts were contracted, and thus shutting out some of the most interesting points of information.

According to the customary mode of book-keeping by double entry, the supposed facts would take the following form in the journal, the word 'sundries' being an abbreviation for 'sundry accounts':

IRON.		Dr. to SUNDRIES.					
Jones & Co.	1 Jany.	200 tons	£5 0 0	1000	0 0		
Smith & Co.	18th "	960 "	4 17 6	1267	10 0		
Thompson & Co.	24th "	191 "	4 15 0	907	5 0		
							3174 15 0
PREMISES.		Dr. to Carpenter & Co.					
							452 8 6
STABLES.		Dr. to Chandler & Co.					
							63 14 10

These journal entries are then carried forward to the ledger, where not only the *personal* accounts are credited, but the *impersonal* accounts are debited. Turning to the index of his ledger, the book-keeper finds the folio appropriated to all transactions in Iron to be, perhaps, 29—the Premises account to be at folio 36, and the Stable account at 16.

He accordingly opens folio 29 in his ledger, where he had previously written the word 'Iron' in large characters at the top of the page, and annexing the proper date, posts the sum of 3174*l.* 15*s.* to the *debit* of that account, and refers in a column ruled for that purpose to the page of the journal. He then looks to his index for the accounts of Jones & Co., Smith & Co., and Thompson & Co.; or if there had been no previous dealings with them, he opens an account with each of these parties on separate pages of his ledger, and posts to their *credit* the several sums which he finds in the journal, carefully stating in his ledger the page in the journal where the entry came from, and in the journal the folio of the ledger where the entry is gone to, in conformity with an invariable rule that no entry should, in any instance, be carried forward from book to book, without a distinct reference in each book to the page of the other.

After posting the three supposed journal entries, the ledger will exhibit the same facts in a new form.

Dr.	IRON.	Cr.
1835		
Jan. To Sundries	651	3174 15 0
Dr.	Jones & Co.	Cr.
	1835	
	Jan. 1. By Iron	1000 0 0
Dr.	Smith & Co.	Cr.
	1835	
	Jan. 12. By Iron	1267 10 0
Dr.	Thompson & Co.	Cr.
	1835	
	Jan. 24. By Iron	907 5 0
Dr.	PREMISES.	Cr.
1835		
Jan. To Carpenter & Co.	452 8 6	
Dr.	Carpenter & Co.	Cr.
	1835	
	Jan. By Premises	452 8 6
Dr.	STABLES	Cr.
1835		
Jan. To Chandler & Co.	63 14 10	
	Chandler & Co.	
	Jan. By Stables	63 14 10

The attentive reader will have taken notice that the purchase of Thompson & Co. on the 24th of the month is journalized in the same entry with the iron purchased twenty-three days before, from Jones & Co., and will infer that in many conjunctures of business, such a delay must be highly inconvenient, especially in cash and bills. Such an inference is quite correct, and the only pretext that can be alleged for persisting in single entry is, that it carries

the events directly from the original books into the ledger without the dilatory intervention of a journal.

The writer of this article has for many years been in the habit of employing a method which combines the quickness of single entry, as it regards the *personal* accounts, with the satisfaction of double entry, as it regards the entire body of the books. He considers this 'combined method' well worthy of the attention of all who either as principals or book-keepers are interested in the accounts of any extensive business. By the method here alluded to a summary ledger is kept, and this is the only ledger that has a journal attached to it. These two books, namely the summary journal and summary ledger, are devoted exclusively to the *impersonal* accounts, together with the bankers', travellers', and other personal accounts of that nature. The results are collected into the journal from the subsidiary books at convenient periods, whether weekly, fortnightly, or monthly. According to this method the debts contracted, by the supposition above, for Iron, Premises, and Stable, would be placed respectively to the credit of the parties in the bought ledger, as soon as the accounts could be examined and passed. On the other hand, every payment made against the purchases, whether by cash, by bills receivable, or by bills payable, would be charged to the proper personal account in the bought ledger at the very moment of making the payment. By this plan the bought ledger is made to exhibit the state of every account it contains, and may be referred to at any time, with the certainty of finding the last event recorded. This is the advantage of single entry, that there is no journal to obstruct the progress of the record which arrives instantaneously at its ultimate destination, and appears without delay in its proper place, namely the *personal* account to which it relates.

The summary journal, in registering these same purchases, throws away all consideration of *particular persons*, except for clearness of reference, by raising a single account comprehending them all under the general name of 'bought ledger,' thus—

Sandries.		Dr. to BOUGHT LEDGER.				
IRON.						
	Jones	900 tons	5 0 0	1000 0 0		
	Smith	960 "	4 17 6	1867 10 0		
	Thompson	191 "	4 15 0	907 5 0		
				3174 15 0		
PREMISES.		Carpenter & Co.		452 8 6		
STABLE.		Chandler & Co.		63 14 10		
				3690 18 4		

The severance of these personal from the impersonal, with a separate ledger allotted to each, will be found extremely valuable to those book-keepers to whom the contrivance may be new, and after a short experience they will feel it to be a decided advance in their professional knowledge to be possessed of a method which, without surrendering one jot of scientific certainty, carries forward the business of the day to *immediate* completion.

With respect to the skill required in journalizing, that is to say, in assigning every occurrence to its proper account, it may here be remarked, that if motives of convenience or advantage are in any particular case sufficient to outweigh the evils which always follow upon too minute a subdivision, the Iron account might be split into pig-iron and bar-iron, with a separate space in the ledger for each description of goods. So also the Stable expenses, instead of forming a separate head of account, might be made to take their place in the ledger as part of a more general account under the name of Trade Expenses; or, on the contrary, they might themselves be distributed into a variety of heads—such as hay, straw, oats, farriery, the ultimate effect upon the profit and loss being of course the same, but the means of watching and controlling the progress of particular outgoings being greatly facilitated.

After having posted his journal, the book-keeper avails himself of the first leisure to ascertain that his work is free from error, and with that view extracts all the balances from his ledger—technically called a balance-sheet. If he finds the total amount of all the debtor balances to agree exactly with the total amount of all the creditor balances, he has a presumptive though by no means a conclusive proof that his books are correct, since one or more errors on one side may happen to be precisely equal in amount to one or more errors on the other side. If, however, there is any difference between the totals, he is sure that error lurks somewhere. The young accountant should propose to himself nothing short of absolute truth as his standard, and should be, at his

very outset, strongly imbued with the feeling, that as his art is perfect in *principle*, it only requires fixed and watchful habits of accuracy to render it perfect in *practice*.

The *Balance Sheet*, however useful to the book-keeper as a test of his accuracy, is far more important to his employers as a bird's-eye view of their affairs.

If, for example, the journal entries already given are properly posted into a ledger, they will result in the following balance sheet:

Dr.		Cr.	
Iron, 651 tons	3174 15 0	Bought Ledger	3690 18 4
Premises	452 8 6		
Stable	63 14 10		
	3690 18 4		3690 18 4

Upon the face of the balance-sheet, double entry speaks at once to the eye, and informs the parties interested not only of the amount of debt incurred, but the means of discharging it, by showing the property divided into proportions of saleable (iron), mortgageable (premises), and consumable (stable): thus distinguishing the effects into those which are more or less available and those which are unavailable for the discharge of immediate obligations.

If a short series of *pro forma* suppositions is added to the above, the value of the balance-sheet will be more distinctly seen in the strong and steady light it sheds upon the vital question of profit and loss.

Suppose, then, that the conductor of the business has sold out 4000*l.* consols at 92½ less ¼ brokerage—that he has paid the proceeds directly into his banker's hands for the use of the business—that he has effected sales of 550 tons of iron at 5*l.* 15*s.* per ton to a variety of customers—that he has received out of these accounts cash to the amount of 758*l.* 16*s.*, and 18 bills, amounting to 2232*l.* 12*s.*, besides allowing 12*l.* 12*s.* in abatements and discount—that out of these cash receipts he has paid taxes 22*l.* 10*s.*, other charges to the amount of 28*l.* 15*s.* 6*d.*, and his bankers 650*l.*—that he has settled Chandler and Co's. demand by a check on his bankers for 63*l.* 14*s.*, abating 10*d.*—that he has drawn checks for salaries and other charges to the amount of 55*l.* 17*s.* 3*d.*—that he has accepted a bill addressed at his bankers at 2 months to Jones and Co. (No. 1) for 975*l.*, deducting 2½ per cent. in discharge of their demand—that he has accepted a bill (No. 2) at 6 months to Smith and Co. 1267*l.* 10*s.*, and another bill (No. 3) at the same date to Thompson and Co. 907*l.* 5*s.*, and another bill (No. 4) at 2 months to Carpenter and Co. 452*l.* 8*s.* 6*d.*—that the bills accepted at 2 months have fallen due and been regularly paid by the bankers, and that the two acceptances at 6 months are still running—that he has compromised a debt of 28*l.* 14*s.* 6*d.* for 10*s.* in the pound, which he has received in cash, forming part of the above sum of 758*l.* 16*s.* Suppose further that of the 18 bills receivable, No. 8 had fallen due and been received in cash, value 8*l.* 14*s.*, and that six others, namely, 1, 4, 5, 12, 13, 16, amounting to 898*l.* 17*s.* 4*d.*, paid short into the banker's, had fallen due and been regularly taken up in full by the acceptor, except Mr. Athelstan's, who, requiring the assistance of 55*l.*, had 25*l.* lent to him out of the cash, and a bill receivable (No. 7) for 30*l.* Suppose also a horse to be bought, by check 35*l.* The original entries recording the above transactions would be made as follows:—The sale of the consols and disposal of the proceeds would *first* appear in the summary journal—the sales of iron would be stated with particulars of *date*, person, quantity, and price in the sold day-book, according to the order of time, and the same facts would be carried forward into the sold ledger, according to the division of persons. The cash-book would show in the order of time the various sums received from the particular buyers, whose accounts would be immediately credited in the sold ledger. The bills-receivable book would give day by day the names of the buyers from whom each bill had been received, and show the page in the sold ledger where it had been carried to his credit. With regard to abatements and discounts, the sold ledger and the bought ledger should each have a sufficient number of folios set apart to contain a list of all such allowances regularly recorded at the time of their occurrence; and these allowances, under the names of 'discounts outwards' and 'discounts inwards,' should be journalized at convenient periods in the summary journal. The bills-payable book would show the date and amount of each acceptance, with a reference to the folio in the bought ledger where each drawer has been debited.

These transactions, when digested in the journal, would give rise to entries of the following effect:—

BANKERS. £4000. at 2½, less Brokerage } SOLD LEDGER. Amount sold as per Day Book, page 1 to 23 550 Tons.	Dr. to CONSOLS.	2695 0 0
	Dr. to IRON.	3162 10 0
CASH. SOLD LEDGER, as per Cash Book BILLS RECEIVABLE, No. 8	Dr. to SUNDRIES.	758 16 0 8 14 0
	Dr. to CASH.	650 0 0 35 0 0 32 10 0 28 15 6
SUNDRIES. BANKERS, as per Cash Book SOLD LEDGER (Athelstan) TAXES CHARGES	Dr. to SOLD LEDGER.	2332 12 0 12 12 0 14 7 3
	Dr. to BILLS RECEIVABLE.	898 17 4 30 0 0
BOUGHT LEDGER. As per Bills-Payable Book	Dr. to BILLS PAYABLE.	3602 3 6
SUNDRIES. BILLS PAYABLE, BOUGHT LEDGER—Chandler & Co. HORSES CHARGES	Dr. to BANKERS.	No. 1 975 0 0 No. 4 452 8 6 63 14 0 35 0 0 55 17 3
	Dr. to DISCOUNT INWARD.	95 0 10

When these entries have been properly posted in the summary ledger, and added to the accounts already there of Premises, Iron, Stable, and Bought Ledger, the general effect will come out in the following balances:—

Bankers . . . 3661 17 7 Cash . . . 41 4 6 Bills receivable 1295 0 8 Sold Ledger . . 199 2 9	Consols . . . 2695 0 0 Bills payable . 2174 15 0 Discount inv. . 35 0 10	5197 5 6 12 5 0 452 8 6 63 14 10 35 0 0
Iron . . . Premises . . . Stable . . . Horse . . . Taxes . . . Charges . . . Discount outw. . . Bad debts . . .	124 2 0	124 2 0
	5694 15 10	5694 15 10

Should a stock-taking be determined upon at this point, the book-keeper, grounding himself upon his balance-sheet, transfers to an account of 'profit and loss' all those balances which represent absolute loss or absolute gain, independently of existing property, because they are matters of mere account, and not matters of opinion. Under the supposed state of things, he would therefore of his own accord make the following entries in his journal:—

PROFIT AND LOSS. TAXES. Balance of this account CHARGES DISCOUNT OUT. BAD DEBTS	Dr. to SUNDRIES.	£32 10 0 84 12 9 12 12 0 14 7 3
	Dr. to PROFIT AND LOSS.	124 2 0
DISCOUNT IN. Balance of discount in.		£95 0 10

The balance-sheet being presented to the employer in the improved state thus produced, is examined, item by item, to ascertain that the property mentioned in the ledger is in actual existence. The cash, the bills payable and receivable, and the balance at the banker's, are disposed of in a few minutes, in all concerns which have the least pretension to regularity of accounts. The sold ledger and bought ledger ought to be thoroughly investigated, and the balance, if any, appearing in the summary ledger, ought to be sustained and elucidated by a schedule of the debts composing that balance, not only for the sake of proving that so much property really exists in the sold, and that all the demands have been discharged from the bought, but also for the purpose of securing the speedy collection of those debts which may have fallen behind in point of time. With regard to iron, it would be seen by the ledger that 651 tons had been bought and 550 tons had been sold. There ought, therefore,

to be 101 tons on hand;—more or less there cannot be without either errors or fraud. After satisfactory proof of the fact, a valuation may be made, either at the market price or the cost price, according to the purpose intended by the stock-taking, which is sometimes to pay out the share of a deceased or retiring partner, sometimes to admit a new one, and sometimes in salutary compliance with an annual custom. Suppose in this case the valuation to be 5*l.* per ton, the consequence would be the following journal entry:—

IRON. 101 tons on hand this day	Dr. to PROFIT AND LOSS.	£505 0 0
	Less Dr. balance of Iron account in Ledger	12 5 0
		492 15 0

Suppose the consols were sold out half a year before, and consequently a dividend due; suppose, also, the value of provender in the stable to be 2*l.* 8*s.* 6*d.*; the horse to be considered one-seventh less valuable than when he was bought, and the premises to have undergone a deterioration of 10 per cent., these matters would be thus recorded in the journal:—

PROFIT AND LOSS. HORSE. Valued this day at	Dr. SUNDRIES. Ledger Balance	35 0 0 30 0 0	5 0 0
PREMISES. Valued this day at	Ledger Balance	468 8 6 407 0 0	45 6
STABLE. Stock on hand this day	Ledger Balance	63 14 10 31 2 6	43 6 4
CONSOLS. Half Year's Dividend due on £4000			99 0 0
			£152 14 10

The effect of all these entries, when posted in the ledger, appears in a new balance-sheet, which now represents the actual state of the concern, with every account in the ledger adjusted to the same moment of time; for the book-keeper who does not, on these occasions, refer every account to the same moment of time discovers that sort of ignorance in his art which Hogarth exposes and satirizes, for the benefit of other artists, in his celebrated picture of 'False Perspective.'

NEW BALANCE-SHEET.

Bankers . . . 3661 17 7 Cash . . . 41 4 6 Bills receivable 1295 0 8 Sold Ledger . . 199 2 9	Consols . . . 2695 0 0 Bills payable 2174 15 0 Profit . . . 530 19 0
5197 5 6 505 0 0 407 0 0 31 2 6 30 0 0	3755 0 0 2174 15 0 530 19 0
£6160 14 0	£6160 14 0

The proprietor of the concern, with these authentic data before him, easily collects together all the accounts which are similar in their nature, and draws from the result the most useful practical inferences. Thus, he finds that in cash and cash-like accounts he possesses

Property of . . . £5197 5 6
Out of which his bills payable will require 2174 15 0
3022 10 6
To which he adds his iron . . . 505 0 0

And finds a free disposable fund of £3527 10 6

Having thus marshalled the floating against the floating accounts, he compares the fixed with the fixed, and finds the premises, horse, and stable to constitute a Total of . . . £458 8 6
more or less unavailable, from which deducting The Profit . . . 230 19 0
for which he is his own creditor, he adds The Difference . . . 227 9 6
to the above disposable fund . . . 3527 10 6
£3755 0 0

and perceives that if the price of consols is the same as when he sold them out, he can replace them, together with the dividend, even although his premises, horse, and provender should yield him only 227*l.* 9*s.* 6*d.* If he continues in business, he periodically extracts from his books the same sort of information, and by comparing the results in the same way ascertains the progress he has made in a given time. In this case the means of living are supposed to be derived from sources independent of the business. If the proprietor had drawn any money for private purposes, he

would have been charged with it in a separate account under his own name.

So, where several partners are interested in any undertaking, the books are kept as if they were the books of one individual, each partner being debited or credited in his personal account, like a stranger, with all that he takes out or brings inwards. At the stock-taking the account of profit and loss is balanced by transferring to the private account of each partner his respective share.

In examining this new balance-sheet, the reader will have remarked that, in point of fact, each account represents the concern itself under different aspects, the debtor side forming an inventory of property so digested as to show at once what and where the several heads of property are, and the creditor side exhibiting the nature and amount of the demands upon the concern. The account of bills payable, for example, shows the amount which the concern is bound to provide for the satisfaction of claims which will be brought against it for actual payment; the account of consols shows the sum of money which the proprietor has embarked in this particular undertaking; and the account of profit and loss points out the amount of advantage he has derived from his transactions, provided all the accounts on the debtor side should realize the sums standing against them.

Another view suggested by this analysis of the new balance-sheet is, that although it may seem at first sight indifferent whether a man is his own debtor or his own creditor, since, in either case, he has no actual payment to provide for; yet in reality it makes an important difference to a trader at his stock-taking, whether he finds the account of profit and loss standing at the debtor or the creditor side of his balance-sheet; since on the debtor side it indicates the absence or destruction of *property*, and on the credit side it indicates the absence or destruction of *obligation*.

This is indeed the whole struggle. It is for profit that the labours, cares, and hazards of trade are encountered, and in books well kept the issue of the struggle is pointed out by this account of profit and loss. In the progress of the business sketched above more profits would accrue, and would swell the credit side of that account, but at the same time expenses and other inroads upon the property would likewise be going forward, and would ultimately array themselves under the several heads for which the concern would be its own debtor. The important question is on which side the preponderance shows itself.

At this point it may be advisable to admonish the young accountant not to be led away by a sophism which will frequently assail him, viz., that whether he keep his books by one method or another the result is the same. Whoever duly considers that the purpose of book-keeping is not only to ascertain the actual state of a concern, but to know what that state ought to be by virtue of all its transactions, will immediately see the impossibility of arriving at that complete knowledge by single entry. One example will make this clear. In weighing the iron, the quantity would be found as heavy by single as by double entry, but it is by double entry alone that you can *know* whether that quantity is the right one. If you wish for satisfaction, as you naturally must, on so interesting a point, double entry gives you at once, and upon system, that satisfaction which single entry drives you to obtain through the laborious uncertain process of 'picking out,' carrying within itself no principle of certainty, and harassing the mind with the consciousness of perpetual liability to error. Single entry is in fact little better than loose memorandums of account, valuable undoubtedly as far as they go, but so incomplete and disjointed, that they throw no useful light upon the past progress of affairs, and are utterly incapable of showing what the present facts *ought to be*.

Double entry is of quite a different character. It begins, proceeds, and ends in as much certainty as human fallibility admits of. Whatever may become of the property in a concern, the matter of account is subject to no possible diminution. Not a single atom can be admitted into its sphere without being ranged under two heads of account, to the credit of one and to the debit of the other. Not an atom within the sphere can change its character, as, for instance, when a bill receivable is paid in cash, without producing a credit in the account it has abandoned, and a debit of equal value in the account it has entered.

BOOM, a commune in the province of Antwerp, ten miles south of Antwerp, with which it communicates by

means of a paved road. The town stands on the banks of the navigable river Rupel; it contains 1045 houses and 6223 inhabitants. A considerable trade is carried on between this place and Antwerp, Mechlin, and Brussels, which is much facilitated by the navigation of the Rupel and by the Brussels canal, which joins the Rupel opposite to the town. Great numbers of bricks and tiles are made here; the building of vessels for river and canal navigation is also carried on; there are two large salt-refineries and seventeen breweries, besides distilleries, rope-walks, tanneries, and establishments for other manufactures. Boom supports two communal schools, in which sixty-five boys and eighty girls are taught. (*Dic. Géog. de la Prov. d'Anvers, par Van der Maelen.*)

BOOM-DAS. [HYRAX.]

BOONDEE, a principality in the S.E. quarter of Rajpootana, under the protection of the Anglo-Indian government, between which and the Rajah of Boondee, Bishen Sing Behauder, a treaty was concluded in February, 1818.

The territory of Boondee formerly comprehended the petty state of Kotah, and with it occupied that division of the province of Ajmeer (Rajpootana) which is known as Harraoutee or Haravati, a name derived from the ruling family, who are of the Hara tribe. The boundaries of Boondee are Kotah on the S. and E., the frontier being about five miles from the river Chumbul; Jeypoor and Oonjara on the N., and Jajghur on the W.

The Rajah of Boondee having brought upon himself the enmity of the Maharatta chiefs, Holkar and Scindia, in consequence of the aid afforded by him to the British army under General Monson, when retreating in 1804, a part of the territory and more than one-half of the revenues of the principality were exacted by those chiefs in the name of tribute. The subsequent success of its operations against Holkar and Scindia having enabled the British government to insist upon the surrender in its favour of the tribute thus exacted, that portion which was paid to Holkar by the Rajah of Boondee was remitted to the latter, together with certain *pergunnahs*, of which Holkar had taken possession. By another article of the treaty of 1818 the Rajah of Boondee engaged to pay to the British government the tribute before paid to Scindia, amounting to 80,000 sicca rupees (9000*l.* per annum). In addition to the pecuniary relief thus afforded to the Rajah, he received, under this treaty, an accession of territory to the extent of 2500 sq. m., including the town of Patun. [RAJPOOTANA.]

(*Mill's Brit. India; Report of Committee of House of Commons on the Affairs of India, 1832, political section.*)

BOONDEE, the capital, in 25° 28' N. lat. and 75° 42' E. long. Properly speaking, the town consists of two parts, distinguished as Old Boondee and New Boondee. The old town, which is to the W. of the modern buildings, is nearly deserted by the inhabitants, and for the most part in ruins: it contains however some fine pagodas, and some fountains. The new town is inclosed by high stone walls and connected with fortifications on a cliff behind the town, and commanding it. The greater part of the houses are built of stone, and are two stories high. The principal street has a very striking appearance. At one end stands an extensive temple, dedicated to Krishna, covered with groups in rilievo, and at the other end is the great palace of the Rajah, built on the side of the hill; the intermediate space is occupied by two rows of shops fantastically ornamented. At the lower end of the street and near the temple are figures of the natural size, cut in stone, of a horse and an elephant—the latter raised on a pedestal.

On the N.E. side of the city is a lake which is supplied with water during the rainy season by another great lake artificially formed by embankments on the high ground. The pass through the hills to the N. of the city is more than 6 m. long, and at three spots is defended by barriers. Near to one of these barriers is a summer residence of the Rajah, and some Hindu temples. Adjoining the second barrier is the cemetery of the Rajah's family, containing many highly ornamented tombs, with figures of elephants and war-horses. (*Hamilton's East Ind. Gaz.*)

BO'OPS, a genus of fishes of the order acanthopterygii, and, according to Cuvier's arrangement, belonging to the fourth family of that tribe called sparoides or sparides.

This genus is chiefly characterized by the species possessing trenchant teeth; the mouth is small and not protractile. The species are generally of brilliant colouring. Most of them occur in the Mediterranean

Boops salpa (*Sparus salpa* of Linnæus) is of an oblong-ovate form: the ground colour of its body is bluish, on which are several longitudinal yellow stripes.

BOORHANPORE, a large and ancient city, formerly the capital of the province of Candeish, on the N.W. bank of the Tuptee River, 29° 19' N. lat. and 76° 18' E. long.

This city is one of the best built in the southern part of Hindustan; the houses are generally constructed of brick, and are two or three stories high. Many of the streets are wide, and paved with stone; the market-place is a large and substantial building, but the city is without architectural ornament. The principal mosque is the only building which is any exception to this remark. It is of gray stone, with an extensive façade supported on arches, and it has two handsome minars of an octagonal form: in front are a fine terrace and a reservoir of water.

Boorhanpore, which had been made the seat of government for the Soubah or Viceroyalty of Candeish by Aurungzebe, was taken, together with the rest of the Soubah, by the Maharattas, about 1760. In October, 1803, shortly after the battle of Assye, this city was taken by a detachment of the army under General Wellesley, but was restored to the Maharajah, Dowlut Rao Scindia, on the conclusion of peace in the month of December in the same year, and the city has since continued subject to his government.

The principal commerce of the place is carried on by a peculiar sect of Mohammedans, known as *Bohrak*, but who call themselves *Ismaehiah* from one of the followers of Mohammed, who lived in the age immediately succeeding that of the prophet. These people, to judge from their personal appearance, are of Arab origin, and they adhere to the Arabian costume; many of them are very wealthy, and inhabit the best houses in the city: their mosque and cemetery are about two miles from Boorhanpore.

The Tuptee is here a narrow river, and fordable in the dry season. Water for the supply of the city is brought by means of an aqueduct from a distance of 4 m., and is plentifully distributed through every street. The grapes, which grow abundantly in the neighbourhood of the city, are said to be the finest in India.

Boorhanpore is distant from Oojein 154 m., from Bombay 240, from Nagpore 256, from Poonah 288, from Agra 508, and from Calcutta 978 m., travelling distances.

(*Mill's Brit. Ind.*; *Hamilton's East Ind. Gas.*)

BOORO, an island in the Eastern seas, situated between the S. E. coast of Celebes and Amboyna, between 3° and 4° S. lat., and 126° and 127° E. long.

This island is of an oval shape; its length from E. to W. is 75, and its average breadth about 40 miles. The inhabitants of the coast, who are Mohammedans, acknowledge the authority of the Dutch settlers, but are governed immediately by their own chiefs, or *oran cayos*. The inhabitants of the interior, which consists for the most part of very high mountains, are the aboriginal Horaforas, and subsist upon wild fruits and the produce of the chase. The south side of the island was formerly much infested by the Papuas, and was in consequence deserted by the natives.

At Cajelli or Booro bay, at the N. E. end of the island, is Fort Defence, the settlement of the Dutch. This port is frequented by South Sea whalers for shelter during the monsoons, as well as to obtain wood and water, which are plentiful. The principal productions are rice, sago, and various kinds of dye and aromatic woods, for which many Chinese vessels come to the island. The Cajeputi tree is a native of Booro, and its product, known in Europe as Cajeput oil, may be obtained in considerable quantity.

(*Stavorinus's Voyages*, vol. i.; *Forrest's Voyage to New Guinea*; *Porter's Tropical Agriculturist*.)

BOOTAN, or **BHOOTAN**, a name formerly employed to designate an indefinite tract of country to the N. E. of Hindustan, is at present limited to the Alpine region, which extends from the banks of the river Teesta eastward, and terminates to the N. of Asam, as it is supposed, about 92° 40' E. long. As the western boundary reaches to 88° 40', the length of the country may be 150 miles, or nearly so. Its extent from N. to S. is only about 100 miles, and is supposed to be included between the parallels of 26° 30' and 28°. Thus, Bootan would occupy an area of 25,000 sq. m., or nearly that of Scotland.

It is bounded on the W. by the territories of the Raja of Sikkim, on the N. by Tibet, and on the S. by Bengal and Bahar; but we are not informed what people inhabit

the country along its eastern borders, and it is only conjectured that they are the Ankas or Akas, a nation which possesses the mountains N. of Asam, and is otherwise little known.

The extensive plains which occupy the southern regions of Central Asia, and are known as the table-land of Tibet, are situated at a great elevation above the sea. There are good reasons for supposing that on an average this elevation is above 10,000 feet. The distance between this table-land and the low plains on the banks of the Ganges, hardly exceeds in a straight line eighty miles, and as these low plains, where they approach nearest the table-land, are hardly 300 feet above the sea, it is easily conceived that the descent from the table-land to the low plains must be exceedingly rapid and uneven. Bootan occupies the whole of this descent and a narrow tract of country at the foot of it.

As far as our information goes, the surface of Bootan is covered with enormous masses of rocky mountains, many of which rise to a considerable height. Between the mountains the valleys, which are extremely narrow, extend south and north, or nearly so, and are traversed by rivers, which for many miles are a succession of cataracts and rapids. Different parts however of this country exhibit different physical features.

Recent observation has shown that elevated plains are generally, if not always, bounded by high lands, which rise considerably above the level of the plains, and it would seem that the height of these mountain-ranges is in some measure proportionate to the elevation of the plains. At least, the table-land of Tibet, the highest of all elevated plains of great extent, is bounded on its southern border by the highest mountains of the globe, the Himalaya range. The mountains rise in their lowest parts at least 5000 feet above the table-land; for the mountain-passes by which the Himalaya are traversed are found to attain an absolute altitude of between 15,000 and 16,000 feet. The summits are still many thousand feet higher, and a few of them rise above 25,000 feet.

Bootan includes the southern declivity of the Himalaya range, and here on the boundary of Tibet stands the Chamalari which rises to about 25,000 feet; somewhat more to the east is Mount Ghassa, whose elevation has not been determined. The number of passes over the Himalaya in this country is said to be eighteen, but we have information only about one, the Soomoonang-pass, which traverses the range to the west of Chamalari, and according to the calculation of Berghaus, deduced from the thermometrical observations of Saunders, is 15,744 feet above the level of Calcutta. It is therefore more than 800 feet lower than the famous Nheetee Paas in Kumaon, which according to Webb rises 16,569 feet above the same level.

The northern parts of Bootan, which belong to the Alpine region, extend southward from the boundary of Tibet and along the southern slope of the Himalaya for about ten miles. It appears that within these narrow limits the high land descends more than 10,000 feet; for the temperature indicates that the valleys, which are about ten miles from the northern boundary and the high passes into Tibet, are hardly more than 5000 feet above the sea, and in many places less. The valley of Tassiusdon, according to Berghaus, is 4811 feet above Calcutta, and that of Panukka is still much lower. This rapid descent constitutes the character of the northern districts of Bootan. Summits which are covered with eternal snow, are contiguous to enormous mountain-masses of bare, black rocks, which, as they decline in height, begin to display short herbage, with here and there a straggling barberry-bush. Farther down, the hollies make the most conspicuous figure on the slopes, and give way in some places to stunted pines, but this scanty covering of vegetation is frequently interrupted by steep bare rocks, on which here and there a fir starts from a crevice. The valleys are so narrow and deep, and the mountains which bound them so steep and high, that the rays of the sun are shut out every hour of the day, except when it is nearly vertical. The rivers rush forth like torrents, foaming violently among huge masses of rock that obstruct their tortuous course, in which they dash from one side to the other. Their progress is only interrupted by numerous rapids, which continue sometimes for great distances, and their volume is continually increased by the streams which descend from the contiguous heights with the quickness of an arrow. The spray rising from the numerous water-falls

loads the atmosphere with vapours, and renders the air extremely chilly, even in summer. In September or October the frost begins in the more elevated parts, which are uninhabited for four or five months of the year. In summer however they are visited by numerous herds of chowry-tailed cattle and their herdsmen, as they offer abundant pasture at that season. At the approach of winter, the cattle are removed to a few deep glens.

Contiguous to this inhospitable Alpine region is the most pleasant and best cultivated part of Bootan, which occupies about one-half of the whole country, extending about fifty miles from north to south. The mountains, though still covering by far the greatest part of the surface, probably never, or rarely, attain the height of 10,000 feet, and they descend with gentle declivities. These, as well as their summits, are clothed with high trees, especially pines and firs; and in other places with birch, aspen, maple, and yew; but no oak has been found. The valleys are open, and in many places they present to the husbandman a level from one to two miles broad, but he has extended his dominion to a considerable distance up the gentle declivities of the adjacent mountains, where he cultivates rice and the grains of Europe, while his orchards produce apples, pears, peaches, apricots, oranges, and walnuts, and the uncultivated spots are covered with strawberries, raspberries, and blackberries. The rivers which traverse the larger valleys bring down from the Alpine region great volumes of water, but as the slope of the valleys is not very great, they continue their course by a tranquil though rapid current, while the smaller streams, which descend from the neighbouring mountains, rush down with the violence of torrents. Numerous villages, hermitages, and farm-houses are distributed up and down the hills and along the banks of the rivers. The climate resembles that of the southern countries of Europe. At Tassisudon, in summer, the thermometer never descends below 60° nor rises above 80°. The summer is the rainy season, when showers are frequent, but there are no heavy rains, such as accompany the south-western monsoon in the low plains of Bengal. In winter the country is for some time covered with snow, except at Panukka and Andipore (Wandipore) in the valley of the Tahan-tchien, where snow is only occasionally seen. This valley, which begins at Mount Ghassa, descends more rapidly and much deeper than the other valleys, and Saunders found the temperature at Panukka nearly equal to that of Rungpore in Bengal. The inhabitants of that place are careful not to expose themselves to a vertical sun, while those of Ghassa feel all the rigour of winter, and are chilled by perpetual snow; yet both these places are in view of each other. On account of this mildness of the climate, the Daeb Raja, or sovereign of Bootan, has chosen Panukka for his winter-residence, though it is situated farther north than Tassisudon, where he passes the summer.

Before the rivers reach the low plains of Bengal, they still descend another slope, which in somewhat more than ten miles sinks from upwards of 3000 feet to less than 300. Here the valleys are again close and deep, and so narrow that they often do not present along the rivers room enough for men and horses to pass, and the roads have consequently been made on the side of high mountains along deep precipices. The sides of the mountains are in many places too steep to admit any kind of vegetation upon them; in other places they are covered with forests of fine trees, which however are useless, being inaccessible: they consist of saul, bamboo, plantains, and others peculiar to this tract, and known to the natives by the names of boubmbahi, toubmbahi, and rindshi. These large trees are clothed with moss and with creepers of surprising length and thickness, and not less remarkable for their flexibility and strength; hence they are an excellent substitute for rope. Agriculture in this district is confined to a few small spots; for though the rocks are covered with a rich and fertile soil, it is hardly ever level enough to be cultivated. Cattle, however, and hogs find abundant food in the spontaneous produce of the woods. This region is exposed to the full south-west monsoon, and is unhealthy, at least to strangers, from the month of May till towards the end of September. The swelling of the neck called in Switzerland *goitre* is more frequent here than in other parts of Bootan.

To the south of this mountain-region, and only divided from it by a few miles of gently sloping ground, extends the Tariyani, noted all over Bengal for its forests and its unhealthiness. It belongs partly to Bootan. This region,

which runs along the whole extent of the Himalaya range from the Brahmoputra to the Ganges at Hurdwar, with an average breadth of twenty or twenty-five miles, is an entire swamp. Numerous springs issue from the base of the mountains, and unite in rivulets; but as the country is a perfect level, the declivity of the soil is not sufficient to draw off this large volume of water, which consequently becomes stagnant, and forms a swamp abounding with the most exuberant vegetation. The soil is covered with rank grass, reeds, fern, and underwood, among which the bamboo grows to the height of thirty feet, and as thick as a man's wrist. It is overtopped by the most compact and loftiest timber of the forest. From this exhaustless store the remotest provinces of India, but especially Bengal, derive an ample supply of the best materials for constructing boats, and for all purposes of building. This swampy country is the haunt of great numbers of elephants, rhinoceroses, tigers, and wild buffaloes; but the exhalations from such a surface of vegetable matter and swamps, increased by an additional degree of heat reflected from the hills, render the air highly injurious to the health of man. It is consequently very thinly inhabited, and by a very miserable class of people. Goitres are frequent among them.

Travelling in a country like Bootan is by no means easy and convenient. In the Tariyani it is performed by means of elephants; but in the mountainous parts, which have no carriage-roads, it can only be undertaken on horseback, for which purpose the Tangun horse, the native breed of this country, is the only one that is suitable. Sometimes persons must be carried over some steep parts of the mountains on the backs of men. But every kind of communication would be quite impossible if the natives had not shown great industry in building bridges. The great variety of these bridges, and their being always adapted to the river and other circumstances, evince no small degree of ingenuity and judgment. They are generally of timber, and if the width of the river will admit, they are laid horizontally from rock to rock. Over broader streams, a triple or quadruple row of timbers, one row projecting over the other, and inserted into the rock, sustain two sloping sides, which are united by a horizontal platform: thus, the centre is raised very much above the current, and the whole bridge forms nearly three sides of an octagon. Piers are very seldom used, on account of the unequal heights of the banks and the extreme rapidity of the rivers. The widest river of Bootan has an iron bridge, consisting of a number of iron chains, which support a matted platform; and two chains are stretched above parallel to the sides, to support a matted border, which is absolutely necessary to the safety of the passenger, who is not quite at his ease till he has landed from this swaying, unsteady footing. At another place, a bridge for foot-passengers is formed of two parallel chains, round which creepers are loosely twisted, from which suitable planks are suspended, the end of one plank resting upon the end of the other, without being confined. Over deep chasms, two ropes, commonly of rattan, or some stout and flexible osier, are stretched from one mountain to another, and they are encircled by a hoop of the same material. The passenger places himself between them, sitting in the hoop, and seizing a rope in each hand, slides himself along with facility and speed, over a tremendous abyss. (Turner.)

The most considerable river of Bootan is the Tehin-tchien, which traverses the whole country from north to south, rising in the mountain-range between the Chamalari and Mount Ghassa, and running by Tassisudon. Being several miles lower down swelled by two considerable tributaries, the Pa-tchien, which rises near Paro and the Ha-tchien, it finds a passage between the mountains of the lower range, from whence it is precipitated in tremendous cataracts, and rushing with rapidity between the high cliffs and rocks that oppose its progress, it descends at length into the plain a few miles east of Buxadewar, and finally joins the Brahmoputra, not much below Rangamatty, under the name of Gadadhar. Its whole course may be about 150 miles.

Parallel to the Tehin-tchien, but farther to the east, runs the Chaan-tchien, of which however only the upper course is known. Two rivers, which rise in the neighbourhood of Mount Ghassa, the Ma-tchien and Pa-tchien, unite at the castle of Panukka, and run to Andipore, or Wandipore, where they are joined by a third river, the Tahan-tchien, and the united waters are called Chaan-tchien. Farther down the course of this river is not known, but it is sup-

posed, after having descended from the highlands, to flow through the flat surface of the district of Bijnee, and to join the Brahmapootra several miles below its entry into Bengal.

The rapidity of all the rivers of Bootan is far too great to allow either navigation or irrigation. The latter circumstance however is not of great importance, as the level country along their banks is of very small extent, most of the cultivated ground being situated on the sides of the hills, from which numerous rills descend. The slopes are cut into stages, and the rice planted on them is watered by the descending streams, which are made to overflow the beds successively. The natives show much industry in the cultivation of their fields, which are always neatly dressed. Besides rice, they cultivate wheat, barley, and a species of the polygonum of Linnæus, which produces a triangular seed, nearly the size of barley, and is the common food of the people in many places. The level tracts along the Tehin-tchien yield two crops in the year; the first, of wheat and barley, is cut in June, and the rice, which is planted immediately after, enjoys the benefit of the rains.

Horticulture is less attended to, though the country is fitted for the production of every fruit and vegetable common without the tropics, and in some situations will bring to perfection many tropical fruits. The most common fruits are apples, pears, peaches, apricots, mulberries, oranges, pomegranates, and walnuts. The apples are coarse, harsh, and ill-tasted, but the peaches and apricots are excellent. The culture of vegetables is also neglected, except that of turnips, which are equal to those of the northern countries of Europe. They also grow shallots, cucumbers, gourds, and melons. The sugar-cane is cultivated at Andipore.

In the rocky soil, near the mountains covered with snow, a species of rhubarb plant (*rheum undulatum*) is found; and in some other parts a kind of cinnamon tree, the leaves of which are much used in cookery in Bengal, and known by the name of teezbant. Paper is made from the bark of a tree.

Of domestic animals only horses, cattle, and hogs are kept. The horses are nearly all of them of a peculiar species, indigenous in Bootan, and found in none of the neighbouring countries. They are called tangun, vulgarly tannian, from Tangustân, the general appellation of the mountains of Bootan, but they are chiefly bred in the valley of the Pa-tchien, the tributary of the Tehin-tchien. They are usually thirteen hands high, and remarkable for their just proportions, uniting in an eminent degree both strength and beauty. They are short-bodied, clean-limbed, and though deep in the chest, yet extremely active. They are commonly of a piebald colour, with various shades of black, bay, and sorrel upon a ground of the purest white. Those of one colour are rare, and not so valuable in the opinion of the Bootees, though much more esteemed by the English in Bengal, to which country a great number is annually exported.

The chowry-tailed cattle, or yak (*Bos grunniens*) [ASIA, p. 482], pastures in summer among the snow-topped mountains which constitute the boundary between Bootan and Tibet, and in the winter it descends into the deep glens farther to the south.

Wild animals are so extremely rare in the mountainous districts of Bootan, that Turner does not notice any, except a kind of monkey, the hunnoowunt of India, the largest in these countries, and the gentlest of the monkey tribe. They have black faces, surrounded by a streak of white hair, and very long slender tails. They are only found in the mild climate near Panukka, and are held sacred by the Bootees as well as by the Hindus. Bees are common, and managed with great care. Among the troublesome animals, leeches and a kind of pestiferous fly are noticed.

The mineral riches are little known, and still less used. Of metals only iron and copper are found, and only the former worked.

There are no towns in Bootan, and even large villages are rare, consisting generally of not more than ten or twelve houses. Only the palaces of the lamas, of the Daeb rajah, and the governors of the provinces, and the numerous fortresses, deserve notice: a drawing and description of the palace of Tassissudon are given in Turner's *Embassy to the Court of Teshoo Lama*, p. 90, &c. The fortresses are always built on very advantageous sites, generally at the confluence of two rivers.

The natives of Bootan, called by the Hindus *Bootees*, or *Botiyas*, belong to a very extensive nation, which occupies the higher regions of the Himalaya range westward to the valley of Cashmere: in Bootan alone they are in possession of the whole mountain-tract. The structure of their body and their features prove that they belong to the same race which is spread over the south of Eastern Asia, and comprehends the Birmans as well as the Chinese.

The Bootees are Buddhists; but in their religious ceremonies they differ widely from other nations. Their temples are small squares, in which the image of Buddha is preserved. They are never opened, and the whole divine service of the people consists in processions made round the temple, accompanied with the mystic words, 'Om man ni pad me hum!' They uncover their heads when they pass a temple, and if travelling on horseback, dismount and walk by. Near the temples are many tall flagstaffs, which have narrow banners of white cloth, reaching nearly from top to bottom, and inscribed with the same mystic words. Besides this there are long walls, commonly about twelve or fifteen feet in length, six feet high, and two thick, with a central part distinguished by being thicker and higher than the sides. On both faces near the top are inserted large tablets, with the same mystic words cut in relief.

The import of these words, according to the explanation of Schmidt, is 'The jewel of the Buddhistic fullness is truly revealed in the Padma (Lotus) flower.'

They consider the Dharma Raja as an incarnation of the Divinity, and he is their ecclesiastical chief as well as their sovereign. Being entirely absorbed in the contemplation of the divinity, he takes no part in the internal or external affairs of the country, which are entirely left to the management of the Daeb Raja, except that the Dharma Raja appoints one member of the state council. This council consists of eight persons, without the assistance of whom the Daeb Raja can do nothing of consequence. This sovereign has to receive the public money, and to distribute it among the officers of government, or to employ it for the support of religion, all which is done according to rules established by custom.

The number of priests, called gyilongs, is considerable, and amounts to upwards of 5000. Their principal duty consists in the study of the religious books, which seem to be numerous, and full of metaphysical distinctions. They are excluded from all commerce with the other sex, and are not permitted to cultivate the ground; but they may enter into trade, and accept public offices.

The Bootees do not kill any animal, but they eat the meat of those which have been killed by others, or have died. New-born children are washed the first day with warm water, and the following day they are immersed in a cold river. No religious ceremonies are observed on entering into matrimony. Rich people take as many wives as they like, and among the poor four or five brothers have only one; the children in such cases are considered as belonging to the eldest brother. Thus we find in Bootan both polygamy and polyandry. Women abandon themselves to a depraved life up to their twenty-fifth or thirtieth year, after which they marry. The dead are burned, and the gyilongs officiate on such occasions; the ashes are thrown into the river. On the house of the burned person flagstaffs are erected, in order to accelerate the regeneration of the owner.

Bootan has some commerce with all the neighbouring countries: the most important is that with Bengal and Tibet. The commodities for Bengal consist of Tangun horses, linen-cloth, moschus, chowries, oranges, walnuts, and mungit (a kind of red colour): they are brought to Rungpore, where they are exchanged for woollen cloth, coarse cottons, indigo, sandal-wood, assafœtida, and spices, which articles are consumed in the country or sent to Tibet. The same commodities are sent to Nepal and Assam, with the addition of rock-salt. Part of the commodities brought from Bengal are sent to H Lusa, in Tibet, with rice, wheat, and flour. Tea, gold, silver, and embroideries are received in exchange. The Bootees import from Cutch Becha: cattle, hogs, dried fish, betel, tobacco, and coarse cottons. Commerce in Bootan is monopolized by the government, the governors of the provinces, and their officers. (Turner's *Embassy to the Teshoo Lama*, and *Kishes Kant Bose*, in *Asiatic Researches*, xv.)

BOOTES (from the Greek *Bofis*, *bos*, 'an ox'), one of the old constellations. Its name signifies the *hardman*.

but it is as frequently called *Arctophylax* by the antients, which means the *guard of the bear*. Aratus calls it by both names.

'*Arctophylax, vulgo qui dicitur esse Bootes.*'

is the version of Cicero. Both Aratus and Hyginus place *Arcrurus* in or under the girdle; but it is usual to draw it between the legs of the figure. Manilius also uses both names. The constellation is connected mythologically with the fables of Arcas, Icarus, Lycaon, and others. The Arabic translators of Ptolemy rendered *Bootes* by *bellower* or *woolfeator*. According to the old figures attached to Hyginus, he is represented as a man with a spear in the right hand (viewed from the back—*Bayer*) and a sickle in the left. The modern figures represent a man with a club in the right hand (viewed in front), and in the left the string which holds the two dogs (*Canes Venatici*). It would seem to be probable that the Great Bear was originally either an agricultural animal or instrument (an ox, an ass, or a waggon), and *Bootes* the driver.

The stars in *Bootes* are as follows:

Character.	No. in Catalogue of				Character.	No. in Catalogue of				Character.	No. in Catalogue of			
	Flamsteed, Piazz, Bradley, &c.	Astron. Society.	Magnitude.			Flamsteed, Piazz, Bradley, &c.	Astron. Society.	Magnitude.			Flamsteed, Piazz, Bradley, &c.	Astron. Society.	Magnitude.	
r v e η ? d q? v? α κ ? λ y?	1	1555	6	ε	21	1625	4	β	42	1708	3			
	2	1557	6	ζ	22	1625	4	γ	43	1710	5			
	3	1568	6	θ	23	1639	4	δ	44	1714	5			
	4	1569	4	γ	24	1643	4	ε	45	1715	5			
	5	1577	4	π	25	1643	4	ζ	46	1719	6			
	6	1578	5½	ρ	26	1645	7	η	47		7			
	7	1583	7	σ	27	1646	3	ι	48	1730	5			
	8	1587	3	τ	29	1630	5	κ	49	1733	3			
	9	1590	5	υ	29	1659	3½	λ	51	1749	4			
	11	1599	6½	φ	30	1660	3	μ	(36)	1737	6			
	12	1611	5	χ	31	1662	5		(69)	1632	6			
	14	1616	6	ψ	32	1664	6		(73)	1636	5½			
	15	1618	6	ω	34	1666	6		(145)	1658	6			
	16	1620	1	ι	35	1670	4½		(193)	1685	6			
	17		4	κ	36	1672	3		(226)	1698	6			
	18	1627	6	λ	37	1686	4		(291)	1720	6			
	19	1623	4	μ	41	1707	5		[1848]	1621	6			
	20	1628	5	ν										

In the preceding, we have availed ourselves of the edition of Flamsteed's Catalogue, just printed by the Admiralty, under the Superintendance of Mr. Baily. We have entirely followed his magnitudes so far as they go; and the query attached to a letter indicates that it is the letter which has been commonly used, but which has not been admitted by Mr. Baily in his revision of the nomenclature and restoration of Bayer. We shall adopt the same plan in future. The numbers are Flamsteed's: those in () are Piazz's: those in [] Bradley's.

BOOTH, BARTON. This eminent actor was descended from an antient and honourable family, being the third son of John Booth, Esq., a near relation of Henry Booth, Earl of Warrington, in Lancashire. He was born in 1681, and educated at Westminster by the famous Dr. Busby. Becoming at a very early age remarkable for the grace of his action and the sweetness of his voice, he was selected to perform the character of Pamphilus in the 'Andria' of Terence, at one of the customary school-exhibitions. The great applause he met with on this occasion was, by his own confession, the first spur to his theatrical ambition; and on being removed to Cambridge at the age of seventeen, to the great annoyance of his parents, who had intended him for the church, he ran away from Trinity College, and joined a company of strolling players. The misdoings of one of the actors, while at Bury in Suffolk, caused the dispersion of the company, and young Booth returned to London in great distress. He was speedily forgiven, and kindly received by his family; but his stage-fever had by no means abated, and in one of its fiercest paroxysms he absolutely engaged with a Mrs. Mins to perform at Bartholomew Fair, where he achieved such renown, that Betterton heard of him, and was prevented engaging him for Drury-Lane only by the fear of offending the noble family to which he was related. Shortly afterwards Booth formed an acquaintance with Ashbury, the manager of the Dublin

theatre, who chanced to be in London, and with him he went to Ireland in June, 1698. His first appearance in Dublin was in the part of Oronoko, and his success, decided from the commencement, continued for two years increasing daily, when he determined to return to England, and having by letter reconciled himself a second time with his family, he obtained from Lord Fitzharding a recommendation to Mr. Betterton, who with great candour and kindness engaged and assisted him to the extent of his power. In 1701 Mr. Booth made his first bow in the Theatre Royal, Drury-Lane, in the character of Maximus, in Lord Rochester's 'Valentinian.' His reception was enthusiastic, and he shortly established himself in public favour, as second only to his great friend and instructor Betterton. In 1712, on the production of Mr. Addison's 'Cato,' Mr. Booth performed the principal character, and was complimented by the Tories, who presented him with fifty guineas, collected in the boxes during the performance, 'as a slight acknowledgment of his honest opposition to a perpetual dictator, and his dying so bravely in the cause of liberty.' The managers of the theatre also presented him with an equal sum, in consideration of the great success his talents had secured to the play; and shortly afterwards Queen Anne, at the request of Lord Bolingbroke, granted a special license recalling all former ones, and nominating Mr. Booth joint manager with Wilks, Cibber, and Dogget.

In 1727 Booth was attacked by a violent fever, which lasted forty-six successive days without intermission, and from the effects of which he never perfectly recovered. In 1729 he was prevailed on to play, for seven nights only, in 'The Double Falsehood,' and they were his last performances. After four years' distressing alienation of mind, he expired, May 10, 1733, of a complication of disorders, in the fifty-third year of his age. Mr. Booth was twice married: first in 1704, to a daughter of Sir William Barkham of Norfolk, Bart., who died in 1710 without issue; and, secondly, in 1719, to Miss Hester Santlow, or Saintlow, a celebrated beautiful and wealthy actress, who survived him, but also without issue. His will, a copy of which is printed in the *London Magazine* for 1733, bears strong testimony of his regard for her, and assigns his reasons for bequeathing to her the whole of his fortune, which he acknowledges he received from her on the day of their marriage, but which he had diminished at least one-third.

Booth's masterpiece as an actor is said by Cibber to have been Othello, but his favourite part was the far less important one of the Ghost in 'Hamlet,' a performance, says Macklin, which has never been imitated successfully. His tone, manner, and gait were so solemn and unearthly, that the audience appeared to be under the impression that a positive spectre stood before them. The soles of his shoes were covered with felt so as to make no noise upon the stage, which he glided more than walked over, thus completing the illusion. Victor, speaking of his person, says 'he was of a middle stature, five feet eight, his form rather inclining to the athletic, though nothing clumsy or heavy, his air and deportment naturally graceful, with a marking eye, and a manly sweetness in his countenance. His voice was completely harmonious, from the softness of the flute to the extent of the trumpet: his attitudes were all picturesque; he was noble in his designs, and happy in his execution. He was an amiable, good-hearted man, a lively companion, and diffident of his own abilities, by which means, says his biographer, he acquired the love and esteem of every one. So much was he in favour with the rich and noble of his day, that though he had no equipage of his own, there was not a nobleman in the kingdom, says Chetwood, who had so many sets of horses at his command. The chariot-and-six of some one or another was sure to be waiting for him every night to take him, after the play, to Windsor, where the court was then kept, and to bring him back the following day in time for the theatre.

BOOTHIA. [N. WEST PASSAGE.]

BOOTON, an island of the eastern seas, lying off the S.E. extremity of the island of Celebes. The 5th parallel S. and the 123rd meridian E. intersect one another about the middle of the island. Booton is about 85 m. long from N. to S., and its average breadth is about 20 m.: it is separated from the island of Pangansane, or Passangane, by a narrow strait, the water in which is deep enough to allow the passage of large vessels: this passage is called the Strait of Booton.

The island is mountainous and woody, but is well cultivated in parts, yielding abundant crops of rice, maize, yams,

and the usual variety of tropical fruits. Fowls and goats are reared for food, and buffaloes are pretty numerous.

On the east side of Booton is a deep bay, called by the Dutch *Dwaal*, or Mistake Bay. There is danger in calm weather of ships being drawn by the set of the currents into this bay, in which case they can only get out again at the coming in of the west monsoon. When Mr. De Clerk was on his voyage to assume the government of Banda, he was detained during a whole year in this inlet.

The inhabitants profess the Mohammedan faith; those who reside on the sea-coast speak the Malayan language. The island is an independent government under its own king, who rules likewise over the neighbouring small island. The Dutch East India Company formerly maintained a settlement on the island, to which they every year sent an officer to destroy the clove trees. This was done under a treaty with the king of Booton, to whom the company made an annual payment of 360 guilders (about 30*l.*) as an equivalent for the privilege, and for the assistance which he bound himself to give them in destroying the trees. The Dutch officer thus employed received the appropriate title of the *extirpator*. (Stavorinus's *Voyages*; Forrest's *Voyage to New Guinea*.)

BOPAUL, or **BHOPAL**, a small independent principality in Central India, lying between 22° 33' and 23° 45' N. lat. and 76° 30' and 78° 63' E. long.; its extreme length from E. to W. is 120, and its extreme breadth from N. to S. 60 m.; its area is computed at about 5000 sq. m. This principality is bounded on the N. and W. by the dominions of the Mahratta Chief Dowlut Rao Scindia, and on the S. and E. by the ceded districts on the Nerbudda, in the possession of the British East India Company; the river Nerbudda forms a natural boundary through the whole extent of the S. frontier. Bopaul is one of the native states of India under British protection; but the Company's government has not formed any subsidiary treaty with the Nabob.

A hilly tract, forming part of the Vindhya mountains, passes through the centre of Bopaul from E. to W. The soil is generally fertile, especially in the valleys, where it consists either of a loose, rich, black loam, or of a more compact ferruginous mould. The principal vegetable products are wheat, maize, peas, and some other grains (gram, jowary, &c.) peculiar to Central India. Rice is not largely cultivated, but sugar, tobacco, cotton and ginger are raised in quantities beyond the wants of the inhabitants, and are exchanged for salt and manufactured goods. Bopaul is well watered, having, besides the Nerbudda, numerous smaller streams, of which the Betwah is the most considerable. This river rises on the N. slope of the Vindhya mountains, near the S. frontier of Bopaul, and flows N. across the principality, passing within 16 m. to the E. of the town of Bopaul. It then flows to the N.E., through the N.E. quarter of the province of Malwa, passes the town of Ereech, in Allahabad, and falls into the Jumna below Kalpee, having completed a course of about 340 m.; the Betwah is not navigable at any season. On the S.W. side of the town of Bopaul is a large tank, 4½ m. long and 1½ m. broad, formed by an embankment at the confluence of several streams. The river Bess issues from this tank and flows to the N.E. for 32 m., when it falls into the Betwah, 1 m. N. of the town of Bilsa in Scindia's dominions. On the E. of the town of Bopaul is a smaller tank about 2 m. long from N. to S.

The town of Bopaul, which is the residence of the Nabob, is in 23° 17' N. lat. and 77° 27' E. long. It is surrounded by a stone wall, and on the S.W. side has a fort built on a rock, but it is in a dilapidated condition, and indeed the whole town exhibits the appearance of decay.

In 1820 the principality contained 4130 villages, of which 714 were uninhabited. The only towns of note besides the capital are Ashta and Islamnagar. Ashta is near the western frontier, and 40 miles S.W. from Bopaul. Islamnagar is a fortified town, 5 m. N. from Bopaul, and was considered impregnable. Through the treachery of the officer to whom it was intrusted it had been delivered up to Scindia, but the operations of war having given the British possession of some territory desirable to Scindia, he was induced to take the same in exchange for Islamnagar, which was, in the year 1818, made over as a gift to the Nabob of Bopaul. Islamnagar stands at the confluence of three streams, forming a natural defence on three sides, and on the fourth side the fort is protected by a morass.

The principality of Bopaul was founded, at the beginning

of the eighteenth century, by Dost Mohammed, an Afghan adventurer in the service of Aurungzebe, by whom the territory was assigned to him. The government remained in the family of the founder for nearly a century, and was then usurped by Vizier Mohammed. This prince was attacked in 1812 by the combined forces of Scindia and the Rajah of Nagpore, against whom he made a successful defence, but was reduced to such distress as repeatedly to solicit aid from the British government. This was long withheld from the dread of offending Scindia, notwithstanding the claims which the Nabob had upon our gratitude for services rendered on a former occasion 'when he had sold all his jewels, that he might be able to maintain troops in aid of our exertions.' In 1816 the power of the Pindarries had grown to such a height as threatened destruction to Bopaul, and the principality was then taken under British protection. At the close of the war with the Mahrattas in 1818 permission was given to some of the chiefs of Pindarries to reside in Bopaul, and pensions were assigned them by the British government, the payment of which was made to depend upon the peaceable conduct of the chiefs. Since that time the principality has enjoyed political repose, and the government being administered with a due regard to the interests of the people by making a settlement of the revenue upon equitable principles, the country is understood to be in a flourishing condition.

(Mill's *Hist. Brit. Ind.*; *Origin of the Pindarries*; Rennell's *Memoir, &c.*; *Rep. Com. H. C. on India*, 1832, general appendix.)

BORA, CATHERINE. [LUTHER.]

BORACIC ACID, formerly called *Homborg's sedative salt* and *sedative salt of borax*, is a compound of the elementary body of boron and oxygen. It exists not only as above mentioned, but also in large quantity in combination with soda in the East Indies, forming borax or the baborate of soda. From this salt, which is mentioned under the head of salts of boracic acid, termed *borates*, it is procured by dissolving four parts of it in sixteen parts of boiling water, and adding one part of concentrated sulphuric acid to the filtered solution. Owing to the superior affinity of the sulphuric acid for the soda, sulphate of soda is formed, and the boracic acid separated crystallizes as the solution cools; it is to be allowed to drain, to be redissolved in boiling water, and again crystallized to separate the sulphuric acid which adheres to it. In order to purify it entirely from this acid, Berzelius recommends that it should be fused in a platinum crucible, and again dissolved in boiling water and crystallized.

Boracic acid has the form of small scaly brilliant colourless crystals, which have a greasy feel. This acid is inodorous; its taste is not strong, and scarcely at all acid. It reddens litmus paper but slightly, and turns turmeric paper brown, as the alkalis do. Water at 60° dissolves about 1-26th of its weight of this acid, and boiling water nearly one-third. It contains about forty-four per cent. of water of crystallization, which is entirely expelled when it is gradually heated to redness in a platinum crucible. If the crystals are suddenly heated, a portion of the acid is carried off by the vapour of the expelled water. When fused boracic acid cools and becomes solid, it splits, and during this operation it is luminous in the dark; the light is probably electric.

Boracic acid in crystals has a specific gravity of 1.45; when fused it is 1.83. It is soluble in alcohol, and the solution burns with a green flame. Although it acts weakly as an acid upon litmus paper, it decomposes the alkaline carbonates with effervescence, and at a red heat it expels most of the volatile acids from their bases.

Boracic acid is composed, according to

Berzelius.		Thomson.	
3 equivalents oxygen	24° 03	2 equivalents oxygen	16
1 do.	boron 10° 91	1 do.	boron 8

Equivalent 34° 94 24°

Boracic acid is sometimes used in chemical investigations, and was formerly employed in medicine.

Borates are the salts which contain boracic acid: of these the only important one is

Borax, a compound of boracic acid and soda, the correct appellation of which is baborate of soda. This salt is imported from the East Indies under the name of *trical* or *rough borax*. It is supposed to be the substance called by Pliny *chrysocola*. Geber in the seventh century mentions borax its nature was pointed out by Geoffroy in 1738 and

Baron in 1748. It is said to be brought from Persia, Ceylon, and also from Tibet, from a lake entirely supplied by springs, fifteen days' journey from Teesho Lumbo the capital. Tincal as imported is mixed with a fatty matter, which may be separated by acids.

The crystals of tincal are bluish or greenish white, and are sometimes nearly transparent, but more commonly opaque. They are soft and brittle. The primary form is an oblique rhombic prism. Tincal is purified by solution in water and crystallization, and is then sold as borax.

Borax has rather an alkaline and sweetish taste, acts like alkalis upon turmeric paper, and is soluble in twelve parts of cold and two of boiling water. It effloresces slowly by exposure to the air, and when two pieces are rubbed together in the dark they become luminous. When moderately heated, borax swells and loses about four-tenths of its weight, and assumes the form of a light porous friable mass, and is called *calcined borax*. When very strongly heated, it melts into a transparent glass. It is composed of, according to

Berzelius.		Thomson.		
2 equivalents	boracic acid	69.88	2 equivalents	.48
1 do.	soda	31.32	1 do.	32
10 do.	water	90.10	8 do.	72
		191.30	152	

Borax is also prepared, both in England and France, from soda and the boracic acid imported from Tuscany. This salt is a little employed in medicine, but is used extensively both in chemical investigations and in the arts as a flux.

The primary form of common borax is an oblique rhombic prism, variously modified; but it has been found by Mr. Payen that if a saturated solution of borax at 174° be slowly cooled, it deposits crystals when the temperature is above 103°, which are in the form of the regular octohedron. These crystals contain only half as much water as those just described.

BORAGINÆÆ, a natural order of regular-flowered *monopetalous dicotyledons*, which are readily distinguished from all others by having their ovary deeply divided into four

lobes, from the middle of which arises a single style. They are moreover characterised by their flowers being arranged in a gyrate manner before they expand. The common borage is often taken as the type of this order, and in fact represents not only its peculiarities of structure, but sensible properties; for all the known species agree in having an insipid juice, and their surface covered over with stiff white hairs, which communicate a peculiar asperity to the skin, whence these plants were formerly called *asperifolia*, or rough-leaved. Some few of the species, with perennial woody roots, yield from those parts a purplish colouring matter, used by dyers under the name of *alkanet*. *Anchusa tinctoria*, *Lithospermum tinctorium*, and some kinds of *Onosma*, are the best known for this quality.

BORASSUS, a kind of palm-tree, called *Tala* in Sanscrit and *Palmyra* by the English, in imitation of the Portuguese, who name it *Palmeira brava*. It is defined by Roxburgh as having diœcious hexandrous flowers; the calyx and corolla in the males consisting each of three distinct pieces, and in the females of from eight to twelve in a confused state; and the ovary of three cells, changing to a three-seeded drupe. There is but one species according to writers on Indian botany; but it is not certain that more than one distinct palm is not confounded under the common name of Palmyra. That which is recognized is called

Borassus flabelliformis. This plant grows all over India both on the continent and in the islands, where it is esteemed of the greatest use on account of the vinous sap and the sugar which are extracted from it. Its trunk is from twenty-five to forty feet high when full grown, and is perceptibly thicker at the base than at the summit. The leaves are fan-shaped, about four feet long, and placed upon stalks of about the same length, which are spiny at their edges; each leaf is divided into from seventy or eighty rays, which are ragged at the end, and the largest of which are placed in the centre. The fruit is about as big as a child's head, three-cornered, with the angles rounded off, and a little furrowed. It consists of a thick, fibrous, rather succulent, yellowish brown rind, containing three seeds the size of a goose-egg. When young the shell of the seed is so soft that it may be readily pierced by the finger, and the pulpy



[*Pulmonaria angustifolia*.]

1, a corolla; 2, the same cut open; 3, the tube of the same; 4, the base of the same with the ovary and its four lobes; 5, an anther; 6, calyx; 7, a section of the calyx, showing the four-lobed fruit; 8, a ripe calyx; 9, an achenium.



[*Borassus flabelliformis*.]

matter which it then contains is cool and sweet and refreshing; but when ripe all this changes to a hard bluish



1, a male spadix; 2, a female inflorescence with the spathes at its base; 3, the back of a male flower; 4, the front of the same; 5, a female flower; 6, the same stripped of its scales and showing barren stamens enveloping the ovary.

albumen which is insipid and uneatable. The outer wood of the stem when old becomes very hard and brown, and although scarcely to be cut transversely, nevertheless divides freely in a longitudinal direction: it is capable of taking a fine polish, and is frequently made use of for bows: the young wood in the centre is white, soft, and worthless. 'This magnificent palm,' says Sir William Jones, 'is justly considered the king of its order, which the Hindus call *trina druma*, or grass-trees. Van Rhoede mentions the bluish, gelatinous, pellucid substance of the young seeds, which in the hot season is cooling and rather agreeable to the taste; but the liquor extracted from the tree is the most seducing and pernicious of intoxicating juices. When just drawn it is as pleasant as Poulhon water fresh from the spring, and almost equal to the best mild champagne. From this liquor, according to Rhoede, sugar is extracted; and it would be happy for these provinces if it were always applied to so innocent a purpose.'

The mode of obtaining the sap of this palm is stated by Rumpf to be by crushing the young inflorescence, and amputating the upper half; the lower is then tied to a leafstalk, and has a vessel, usually of bamboo, attached to its end. The vessel gradually fills with sap, and is removed every morning; when replaced, a fresh slice is cut from the wounded end of the inflorescence,—an operation which is repeated daily until the whole of the raceme is sliced away. In procuring the sugar exactly the same process is followed, but the inside of the receiver is powdered with lime, which prevents fermentation taking place: the juice is afterwards boiled down and finally dried by exposure to smoke in little baskets.

BORAX, a compound of boracic acid and soda. It is quite insoluble in alcohol. It is precipitated from its solutions by all mineral acids and alkalies, and most alkaline and metallic salts. These are therefore incompatible with it in prescriptions.

Dr. A. T. Thomson states, that when liborate of soda and honey are mixed in equal portions, a chemical union takes place, by which a deliquescent salt is formed. This likewise happens when the liborate is added to a solution or mixture of honey and water.

The taste of borax is sweetish, slightly alkaline, and refrigerant.

In Britain borax is chiefly employed as a local application to aphthous sores, particularly of the mouths of children, and is applied either in powder, dissolved in water, or mixed with sugar or honey. If the opinion entertained by Dr. Thomson be correct, that it is the new salt resulting from the union with honey which is the useful agent in these cases, and not the borax simply, the last method is the only proper one: it is also the most agreeable, and therefore to be preferred, especially when the honey of roses (*mel rosarum*) is employed to form the compound.

The compound of borax with honey of roses, added to a proper quantity of warm water, forms, when cold, a very efficacious gargle in many cases of ulcerated sore-throat. But the employment of borax is much too limited in Britain. It possesses an influence over the uterus similar to that of ergot of rye, which renders it as useful in protracted parturition, while it is much safer both for mother and child. (Hufeland's *Journal*, December, 1823, p. 114; and November, 1824, p. 123.)

It is also serviceable as a refrigerant in slight febrile affections. But its external employment is more worthy of notice: in several cutaneous diseases it forms a lotion of great efficacy. A weak solution of it in rose-water, kept constantly applied by means of a thin linen cloth, over the redness which often afflicts the nose of delicate persons, relieves the sense of heat, and removes the florid color. Many other spots on the face may be removed in a similar way. It is also a very useful application to inflamed eyes, and also to chilblains. (*Geiger. Magaz. für Pharmacie*, vol. xxii. p. 26.)

BORBORUS (*Iphaerocera* of Latreille), a genus of dipterous, or two-winged flies, of the family *Muscidae*. Its chief characters exist in the posterior thighs, which are much compressed, and the two basal joints of the posterior tarsi, which are considerably larger than the following. The head is concave in front and reflexed towards the mouth: the antennæ diverge, and are sometimes almost as long as the fore part of the head. The second cell of the posterior extremity of the wing (the last of the two which occupy the middle of its length) is closed before it reaches the margin.

These little flies are found in marshy places, and on putrid substances, but more particularly dung heaps, in which probably their larvæ reside; they are always abundant about cucumber frames, and are of a brownish color. Most of the species when expanded would scarcely measure a quarter of an inch.

BORDA, JEAN CHARLES, born at Dax, May 4, 1733, of an ancient family, distinguished in the military service. He showed an early taste for mathematics, and, overcoming the objections of his father, began his studies in military engineering, but afterwards entered the *Chancellerie*. This change he made in order to remain at Paris, where D'Alembert, to whom he had been presented, had recommended him to fix himself, and look forward to the Academy of Sciences. In 1756 some mathematical memoirs procured him admission into that body. He was at the battle of Hastenbeck in 1757, after which he returned to the engineer service (into which he was admitted without examination), as interfering less with his pursuits. He was immediately employed at a sea-port, and this circumstance decided his future career. From this time to 1769 he published various memoirs as well on hydrostatics as on pure analysis. He tried, both by experiment and theory, various matters connected with navigation and ship building. In 1767 he entered the naval service. In 1771 he embarked in the *Flora* for America, with MM. Verduin and Parry. The object of the voyage was to find methods of improving the performance of watches at sea; the observations and results made were published in 1778, under the title of 'Voyage fait par ordre du roi, &c. par MM. de Verduin, &c. In 1779 he was sent with two frigates to survey the Canary Islands. He ascended the peak of Teneriffe, ascertained its height, and corrected some tables he had formerly made for finding the distance of a ship from it by means of its apparent height. Here he introduced into the French naval service the use of reflecting instruments, instead of determining

positions by compass-bearings. He served under D'Estaing in 1777 and 1778, and in 1782 was sent with a sixty-four gun ship to convey troops to Martinique. He then joined De Grasse's squadron, and being detached with a small force of frigates on a cruise, he found himself, on the clearing up of a mist, in the midst of an English squadron. He defended himself stoutly, enabled the rest of his ships to escape, and was then obliged to give up his own vessel (the *Solitaire*) a perfect wreck. On reading this extraordinary account of a single ship defending itself for three hours against a squadron in the midst of which it was at the beginning of the action, we thought it might be safe to compare it with the official account of the English admiral, and we find another version, namely, that in the month of December, 1782, the *Solitaire* fell in with the squadron of Sir R. Hughes, and of course endeavoured to escape; that the Ruby, of 60 guns, commanded by Captain Collins, overtook her by dint of sailing, and captured her in *forty-one minutes*, a perfect wreck, the only circumstance in which the two accounts agree, and on which the admiral takes occasion to notice the very great superiority of the fire of the Ruby. Borda was honourably treated, and allowed to return to France on parole. From that time to the end of a very useful life, he was mostly employed on the great measurement of the meridian. He died February 19-20, 1799. The preceding summary is on the authority of the *éloge* in the 4th volume of the *Memoirs of the Institute*.

A sketch of this kind is not the place to describe inventions or methods, which will be found in their proper places. In 1767 Mayer had proposed a *whole circle* of reflexion for astronomical purposes. Borda published the account of his own improvement of the idea, since so well known, in 1787, under the title of 'Description et usage du Cercle de Reflexion.' The repeating circle (a further modification of the ideas of Mayer) was not described by himself, but appeared first, so far as we can find, in the 'Exposé des Opérations, &c.,' (94 pages) published in 1791 by the three commissioners, Cassini, Méchain, and Legendre, appointed to superintend the French part of the junction of the observatories of Paris and Greenwich.

In 1790 he found by experiment the length of the pendulum at Paris (which at that time was contemplated as the basis of the new system of measures). His means and result are described under ΠΕΝΔΥΛΩΝ. From that time to the end of his life he was employed in devising and executing the means of forwarding the great survey: the methods for measuring the base were formed under his inspection, and he was in fact the *inventor* of most of the original instruments employed. It has been said that to him and Coulomb must be traced the rise of the sound *experimental philosophy* for which the French have since become distinguished; and it certainly appears to us that there is some truth in the observation.

In the meanwhile he had charged himself with the expense of calculating and printing new tables of logarithmic sines, &c., corresponding with the new division of the circle into 400 degrees. These were published in 1801, under the title of 'Tables Trigonométriques Décimales, &c.' (An. ix.) with revision and an explanation, by Delambre.

Borda was of a quick and lively turn. When a boy, he is said to have been able to make two translations from French into Latin at once, in different terms, from dictation, one for himself and one for his next class-fellow. He was fond of poetry and the ancient writers, and particularly attached to the *Odyssey* of Homer.

BORDA'RII, one of the classes of agricultural occupiers of land mentioned in the Domesday Survey, and, with the exception of the villani, the largest. The origin of their name, and the exact nature of their tenure, have been variously interpreted. Lord Coke (*Inst. lib. i. §. i. fol. 5 b. edit. 1628*) calls them 'boors holding a little house with some land of husbandry, bigger than a cottage.' Nichols, in his 'Introduction to the History of Leicestershire,' p. xlv., considers them as cottagers, taking their name from living on the borders of a village or manor: but this is sufficiently refuted by Domesday itself, where we find them not only mentioned generally among the agricultural occupiers of land, but in one instance as 'circa aulam manentes, dwelling near the manor house; and even residing in some of the larger towns. In two quarters of the town of Huntingdon, at the time of forming the Survey, as well as in king Edward the Confessor's time, there were 116 burghesses, and subordinate to them 100 bordarii, who aided them in the

payment of the geld or tax. (*Domesd. Book, tom. i., fol. 203.*) In Norwich there were 420 bordarii: and 20 are mentioned as living in Thetford. (*Ibid. tom. ii. fol. 116 b. 173.*)

Bishop Kennett says, 'The bordarii often mentioned in the Domesday Inquisition were distinct from the servi and villani, and seem to be those of a less servile condition, who had a bord or cottage with a small parcel of land allowed to them, on condition they should supply the lord with poultry and eggs and other small provisions for his board and entertainment.' (*Gloss. Paroch. Antiq.*) Such also is the interpretation given by Blomfield in his 'History of Norfolk.' Brady says 'they were drudges, and performed vile services, which were reserved by the lord upon a poor little house, and a small parcel of land, and might perhaps be domestic works, such as grinding, threshing, drawing water, cutting wood, &c.' (*Pref., p. 56.*)

BORD, as Bishop Kennett has already noticed, was a cottage. Bordarii, it should seem, were cottagers merely. In one of the Ely Registers we find bordarii, where the breviated of the same entry in Domesday itself reads *cotarii*. Their condition was probably different on different manors. In some entries in the Domesday Survey, 'bordarii arantes' occur. At Evesham, on the abbey demesne, 27 bordarii are described as 'servientes curiæ.' (*Domesd., tom. i., fol. 175 b.*)

On the demesne appertaining to the castle of Ewias, there were 12 bordarii, who are described as performing personal labour on one day in every week. (*Ibid. fol. 186.*) At St. Edmondsbury in Suffolk, the abbot had 118 homagers, and under them 52 bordarii. The total number of bordarii noticed in the different counties of England in Domesday Book is 82,634. (*Ellis's General Introd. to Domesday Book, edit. 1833, vol. i. p. 82, ii. p. 511; Heywood's Dissert. upon the Ranks of the People under the Anglo-Saxon Governments, pp. 303, 305.*)

BORDEAUX, or BOURDEAUX * (antiently BOURDEAUS and BORDEAULX), one of the most important cities in France, in the department of Gironde: 371 miles S.S.W. from Paris by Orléans, Vierzon, Châteauroux, Limoges, and Périgueux; 376 by Chartres, Vendôme, Tours, and Angoulême; and 378 by Orléans, Blois, Tours, and Angoulême. It is in 44° 50' 25" N. lat., and 0° 33' 35" W. long.

Bordeaux is on the left or western bank of the river Garonne, which here makes a considerable bend, having the city on its concave bank, which is lined with extensive quays; and as the buildings extend to the greatest distance from the river about the centre of these quays, and cover a narrower space as they approach the extremities, the whole form of the place nearly resembles that of the crescent moon. The bend of the river is so great, that a line or chord drawn from N. by W. to S. by E. and joining the two extremities or horns of the crescent, not only includes a portion of the river, but also of the opposite or convex bank, on which is the suburb of La Bastide. The length of such line or chord (measured on the *Plan of Bordeaux*, published by the Society for the Diffusion of Useful Knowledge) is about two miles: the distance between the same points along the bank of the river is about two miles and a half; and along the convex boundary of the town towards the open country, more than four miles and a half: the greatest breadth from the river towards the country, drawn from W. by S. to E. by N., is about a mile.

Bordeaux is a very antient city. It was an important place in the time of Strabo, who was contemporary with Our Lord. In the Geography of Strabo it is mentioned as the *ἑμπορείον* (emporion), or chief trading-place of the *Βιτρούργιες* (in Latin Bituriges), who were surnamed *Ἰοσκολοί* (Ioscoli) according to Strabo, Ubisci or Vibisci according to others, or Vivisci according to Ausonius. These Bituriges were a Celtic nation (a branch probably of the Bituriges Cubi who inhabited the province of Berr), and had settled within the limits which Cæsar assigns to the Aquitani. Strabo describes the town, which he calls *Βουρδιγάλα* (Bourdigala), as situated *ἀμφοβαλάριον ἕως*, which D'Anville interprets as meaning a place up to which the sea (or tide) flows. Ptolemy writes the name in the same manner as Strabo; but

* The former of these two is now the prevalent mode of writing this name: in the time of M. D'Anville the practice seems to have been more variable. D'Anville himself gives some reasons for preferring 'Bordeaux.' Deyrienne, the Benedictine, in his *History of Bordeaux*, contends for the 'ou,' but says that the Benedictine, in his *History of Bordeaux*, contends for the 'ou,' but says that the Benedictine had established the use of 'Bordeaux.'—It is observable that Viesseux says this is an old form, more antient indeed than that of Bourdeaux; and in a very antient map of France in the British Museum (Venice, 1566) it is written *Bordeaulx*.



- A. The shaded parts of the map are the limits of the Roman Burdigala, and the portion encircled nearest the river is the ancient port of the same.
- B. Le Palais Gallien or Amphitheatre.
- C. The Stream Divitia.
- D. Hôtel de Ville.
- E. Château Trompette.
- F. Castle of Ha, now a prison.
- G. Fort Ste. Croix, or St. Louis.
- H. The Bridge.
- I. The Custom House.
- K. The Exchange.
- L. Royal Building Yard.
- M. Place Royale.

- N. Place Dauphine.
- O. Cours XII. Mars.
- P. Allées d'Angoulême and de Sens.
- Q. Rue Chapeau Rouge.
- R. Place Latée.
- S. Palais or Château Royal.
- T. Principal Theatre.
- U. Cathedral.
- V. Public Cemetery, formerly Vineyard of the Chartreuse.
- W. College Royal, or High School.
- X. School for the Deaf and Dumb.
- Y. Hôtel de l'Académie Royale.
- Z. Funding Hospital.

- a, b, c. Walls of Bordeaux in later times, marked by a strong line.
- d. Cours d'Albret.
- e. Cours de Tourny.
- f. Cours du Jardin Public.
- g. Allées de Tourny.
- h. Quai de Chartrons.
- i. Quai de Bacalan.
- k. Jardin Public.
- l. La Bastide.
- 1. Ste. Croix Suburb.
- 2. St Julien do.
- 3. Ste. Eulalie do.
- 4. St. Saurin do.
- 5. Chartrons do.

the Latin writers give Burdigala and Burdegala. The importance of Burdigala is shown by the circumstance, that it was made the capital of the provinces of 'Aquitania Secunda' in the subdivision of the Gallic provinces, about the middle or latter end of the fourth century. Ausonius, a Latin poet of the fourth century, himself a native of this place, has left a description of it in his poem *Clara Urbes*, or *Ordo Nobilium Urbium*, from which we take the following extract :

Impia laetudum condemno silentia, quod te,
 O patria, insignem Baccho, stantique, uisique,
 Moribus ingruisque hominum, procerumque senatu,
 Non inter primas memorem: quasi concius urbis
 Exagum, immeritis dubitem contingere laudes.
 Non pudor hinc nobis. Nec enim mihi barbara Rheus
 Ora, nec Arctus domus est glacialis in Hæmo;
 Burdigala est natale solum: elementa crelli
 Mitti nã, et rigus larga indulgentia terras;
 Ver longum, brumæque breuis, iuga frondis subeunt.
 Venient equosque imitata fluenta meatum.
 Quisirus aurorum species, sic terribis alis
 Ardida, ut aeris intret fastigia nubra.
 Distincta interne uas mirere, domorum
 Dispositum, et latas uicinas seruare plateas:
 Tam respondentes directa in compita portas,
 Per mediæque urbis fontani summis aluicam:
 Quam paler Oceanus reddere cum impleuerit meta,
 Adliab totum spectabilem classibus equor.

Clara Urbes, xiv. B.

'I have long been condemning my impious silence, in not mentioning among the chief [cities], thee, O my country, renowned for wine, and streams, and men; for the manners and talents of thy inhabitants, and [thy] council of the nobles:—as though conscious of the small [extent of my native] city, I hesitated to touch upon unmerited praises. No shame do I feel for this reason. Not mine the barbarous bank of the Rhenus, nor is my icy dwelling in the northern Hæmus. Burdigala is my birth-place, where the

temperature of the sky is mild, and great the liberality (i. e. fertility) of the watered earth. Long is the spring and short the winters; and close at hand are wood-crowned camuences.* The waters are ruffled with tides like those of the ocean.† The form of the walls is quadrangular, and so lofty with its high towers, that [their] summits pierce the airy clouds. You will admire the well-arranged [*distinctas*, adorned] streets within, the disposition of the houses, and that the broad-way, [*plateas*] still [justly] preserve their name: and then [you will admire] the gates corresponding to the streets which cross at right angles, [*directa compita*,] and the bed of the stream from a spring, flowing through the midst of the city:‡ and when Father Ocean has filled this with his up-flowing tide, you will see the whole water covered with fleets.'

Besides the stream mentioned in the above extract, Ausonius notices another which supplied a handsomely adorned and copious fountain, and which he calls Divona. The site of the Roman Burdigala, as we gather from the above extract, was a quadrangle: the greater diameter of this quadrangle extended nearly from E. to W. The gates appear to have been fourteen in number: four on the north, and as many on the south side, and three each on the eastern and western sides. La Porte Bassee, the last of the gates, was demolished about twenty or five and twenty years since. Of the walls and towers some remains it is probable exist still. The stones used in the foundations of the wall were of a great size. Two Roman edifices survived the various devastations of the city, and came down to modern

* As the country on the west side of the Garonne is flat, we must suppose the poet to refer to the hills on the opposite bank.

† The tide flows up the Garonne considerably above Bordeaux.

‡ Called the Divitia (now La Divina): of the dock which was formed in its channel (now covered over) no vestiges remain. See Elias Visnotus, Commentary on Ausonius.

days. The ruins of one of these, the amphitheatre, or, as it is called, *Le Palais Galien*, 'the palace of Gallienus,' yet remain, though much dilapidated; the other edifice, the 'Palais Tutele,' as it is called by Vinet, was demolished when Louis XIV. rebuilt Château Trompette, in the latter part of the seventeenth century. It stood on what was the esplanade of the castle, which has in its turn been demolished, and the site is now occupied by the grand 'Place de Louis XVI.' Some authorities speak of an 'amphitheatre' distinct from the Palace of Gallienus, but we think this has arisen from some misapprehension on their part.

The amphitheatre is in the outskirts of the town, or rather in the Fauxbourg St. Surin, just to the left of the road to Medoc. Its greater diameter when entire was 226 French, or about 2-1 English feet; its smaller diameter 166 French, or 177 English feet; its external elevation 60 French, or 64 English feet. During the Revolution the site was sold as national property, and the arena defaced with a parcel of little houses, to which the most perfect remains of the amphitheatre were made to serve as foundations, or for the erection of which the stones of this interesting monument of a former age were appropriated. The circuit of the arena may be traced however all round, and there remain many arches constructed with alternate courses of brick-work and of small square stones. When Vinet published his *L'Antiquité de Bourdeaux* (1574), this building was in much better preservation. He has given an engraving of it in his work. *Le Palais Tutele* is supposed by some to have been a temple consecrated to the tutelary genius or divinity of the city. It consisted of a basement about 96 English feet long by about 70 wide, and 23 or 24 high, upon which had been erected twenty-four Corinthian pillars, eight being presented at the side, and six at the front. Upon these columns, and supported by them, was an attic, having open spaces corresponding in number to the spaces between the columns. The pilasters between the spaces of this attic were adorned with caryatid figures on the front and back. In the basement was an apartment nine feet high, occupied at a later period as a wine-cellar. (Stuart's and Revett's *Antiquities of Athens*, last edit. vol. iii. p. 120 note.) There are few other remains of Roman antiquity. Some inscriptions and some statues, part of them mutilated, which have been found, have been collected together. (Millin, *Voyage dans les Départements du Midi de la France*; Devienne, *Histoire de Bourdeaux*.)

Notwithstanding these remains of antiquity have been found in the city, some learned men (and among them Adrian de Valois), misled by some passages in Gregory of Tours and another ancient writer, have contended that the Roman Burdigala was on the right bank of the Garonne; and that it was not till the sack of the city by the Saracens that the citizens transferred their abode to the other side of the river.

Under the Romans Burdigala was not the scene of any important historical event, except the assumption of the purple by Tetricus (one of those commonly but inaccurately designated 'the thirty tyrants'), in the reign of Gallienus, in the third century: it derives its reputation rather from the zeal with which literature was cultivated. Ausonius has sung the praises of its numerous professors. Devienne, in his '*Histoire de Bourdeaux*,' tells us that in the school of this city religious profession formed no bar to entrance; that Christians and Pagans studied there alike, and that even females received instruction in the establishment.

Early in the fifth century (412) the Visigoths first attacked Gaul and possessed themselves of Burdigala and other places. Being obliged to withdraw into Spain, they burnt part of this city. After some years they became masters of it again, and it continued in their power, forming part of their kingdom, of which Tolosa or Toulouse was the capital. Under its new masters Burdigala declined; and the persecution of the Catholic Christians by the Arian Visigoths is represented as one cause of its downfall. After remaining under the dominion of the Visigoths for nearly a century, it came into the hands of the Frankish conqueror Clovis, who, after the battle of Vouillé, in which he defeated and slew Alaric, king of the Visigoths, wintered in this town. In the troubles which agitated France under the descendants of Clovis, it was the object of contest, and when the successful ambition of Charles Martel seemed to promise a more vigorous government and greater internal tranquillity, this unfortunate city was attacked by the Saracens, and being unable to resist their fury, the greater part

of the public buildings were burned, and the inhabitants nearly all put to the sword. This event occurred about 731 or 732.

Domestic troubles, caused by the attempts of the Dukes of Aquitaine to become independent of the kings of France, agitated afresh the south-west of France, after the defeat and expulsion of the Saracens by Charles Martel; but we have no account that Burdigala suffered by these commotions; it was perhaps too much reduced by the disaster it had lately sustained to be an object of ambition to either party. Under Charlemagne it was under a count of its own, and began to recover from its downfall. Its prosperity was advanced by its being incorporated by Charles le Chauve (the Bald), who reigned about the middle of the ninth century, with the duchy of Gascogne, of which it became the capital. But prosperity in those dark ages only rendered it more the object of attack; Burdigala, or, as we may now call it, Bourdeaux, was taken by the Normans, and underwent a more complete destruction than any which it had yet experienced. The houses were almost entirely destroyed, and the unhappy Bordelois abandoned for a time their native city.

When the Normans received from Charles the Simple, about the close of the ninth or beginning of the tenth century, the province called from them Normandie, they desisted from ravaging the rest of France; and Bourdeaux was rebuilt and repopled, and became again the residence of the dukes of Gascogne, who built here the castle or palace of L'Ombrière. Upon the union of the duchies of Guienne and Gascogne, the dukes abandoned Bourdeaux for Poitiers, which had been the capital of the duchy of Guienne; and Bourdeaux was reduced to the capital of a county, to the possessor of which it gave title. Yet it still continued to be an important place, and it may be questioned whether it did not resume its rank of ducal capital; for here it was that Louis VII. of France (le Jeune) espoused Alienor or Eleanor, heiress of the united duchies of Guienne and Gascogne. The divorce of this princess, and her subsequent union with Henry, count of Anjou and king of England (Henry II.), caused Bourdeaux to become part of the extensive dominions which the English monarchs possessed in France.

Bordeaux now became the capital of Guienne, a duchy formed of the districts of Bordelois, Agenois, Quercy, Périgord, Limousin, and Saintonge. This province remained to the English kings when Philippe Auguste, in the beginning of the thirteenth century, stripped them of all their other French possessions. Among those who held during this time the title of dukes of Guienne by the appointment of the English crown, were Richard Cœur de Lion, during the lifetime of his father, Henry II.; and Richard, duke of Cornwall, better known as king of the Romans, brother of Henry III. In the reign of this last-named king, the Hotel de Ville of Bourdeaux was built, and the municipal government established or revived; and Henry himself made a long, needless, and expensive stay at Bourdeaux, to the regret and the cost of his English subjects. The weakness of this prince, and the harshness of Simon de Montfort, earl of Leicester, whom he had nominated to the government of Guienne (after having wrested the duchy from Richard, duke of Cornwall, in order to bestow it upon his own then infant son, afterwards Edward I.), led to revolts on the part of the Gascons, and the earl was compelled to fly to England. He returned, however, with an army, and Bourdeaux was compelled to open its gates to him; but as he continued his severities, new troubles arose. The king was now inclined to listen to the complaints of his subjects in Guienne: but the barons in the parliament of England, to which the affair was referred, supported Leicester; and the king encouraged the inhabitants of Guienne to revolt against the governor of his own appointment. The Bordelois raised troops and attacked Leicester; but the valour and military skill of this celebrated man gained him the victory, and Bourdeaux was obliged again to submit upon very hard conditions. The troubles of the province were not, however, allayed, until Edward, son of Henry III., to whom, as already noticed, the duchy of Guienne had been given, took up his residence there, and acquired by his good qualities the esteem of his subjects.

In the reign of Edward I. of England, a dispute having arisen between him and the King of France, Philippe IV. (le Bel), Edward, whose attention was occupied by his wars in Scotland, agreed to deliver up Bourdeaux and the rest of

Guienne to the French, upon a promise that it should immediately be restored. This was intended to satisfy the indignation of Philippe, to whom Edward owed fealty for his French possessions. When the cession had been made, and restoration, agreeably to the convention, was demanded, Philippe eluded the demand. War ensued, and it was not until ten years after that the king of England re-entered into the possession of this part of his inheritance. Edward II., son and successor of Edward I., having quarrelled with Charles IV. (le Bel) of France, lost all Guienne except Bordeaux, and one or two other places; Guienne was given up by Charles, not to Edward himself, but to his son Edward, prince of Wales. This was in the early part of the fourteenth century. Either by Edward II. or by Edward III., when he became king of England, upon the deposition of his father, Bordeaux was annexed by a particular charter to the crown of England: this connexion, which was declared to be inseparable on any ground whatever, was formed by the desire of the municipal authorities.

In the war between France and England which has signalized the reign of Edward III., Bordeaux became a place of great importance. From it the Black Prince set out on that expedition which led to the battle of Poitiers, and to it he conducted Jean II., king of France, who was taken prisoner in that memorable engagement. This was a period of great splendour to Bordeaux: it became the capital of the principality of Guienne, which Edward III. formed in favour of his valiant son, from the provinces of Poitou, Saintonge, Agenois, Perigord, Limousin, Quercy, Bigorre, the territory of Jaure, Angoumois, Rouergue, and all that was comprehended in Guienne proper and Gascogne. Eleven years were passed by this prince at his new capital in all the splendour of sovereignty; and here was born his son, the degenerate and unhappy Richard II. When the affairs of the English declined, and there seemed a probability that Guienne (which was now reduced to the limits which bounded it before the erection of the principality in favour of the Black Prince) would be conquered by the French, the inhabitants of Bordeaux formed a convention with those of several other cities for mutual succour and defence. They retained their attachment to the English; and when Richard II. ceded the duchy of Guienne to his uncle, John of Gaunt, Duke of Lancaster, they refused to be separated from the English crown. So warmly were they attached to Richard as a native of their city, that when one of those who were suspected of having murdered him arrived in their city, they rose and massacred him.

Bordeaux, and the province of which it was the capital, maintained its connexion with England during the reigns of Henry IV. and V.; but in the reign of Henry VI., upon the downfall of the English power in France, the connexion was broken. In 1451 the Bordelois capitulated to Charles VII. of France on favourable terms; but very shortly after they revolted to the English, and the valiant Talbot, Earl of Shrewsbury, then upwards of eighty, was sent with an army to their support. The death of Talbot and the destruction of his army forced them again to submit to the French king (1453), on much harder conditions. To secure the fidelity of the Bordelois, and to prevent any attempts from the English, Charles caused to be erected the Château Trompette and the Castle of Ha.

The events which preceded and accompanied the submission of Bordeaux to the French tended much to reduce its population and to diminish its grandeur; the favour shown to it by the Kings of France tended, however, to revive it. But an insurrection excited by the oppressive effect of the gabelle, or tax upon salt, brought new calamities. In the year 1548 the people rose, and being assisted by the country folks of Guienne or the neighbouring provinces, committed great excesses; and when the tumult was quelled, the brutal Montmorenci, constable of France, inflicted terrible severities upon the unhappy townsmen.

The progress of the Reformation in France having alarmed the supporters of the dominant church, several Protestants were put to death. In this persecution the local authorities of Bordeaux took a conspicuous part, and several persons were burnt by their order. The new opinions however spread, and in 1561 there were about seven thousand of the Reformed in this city. When the religious animosities broke out into open warfare, the Protestants, in 1563, endeavoured to surprise the Château Trompette, but the attempt failed. When the massacre of St. Bartholomew was made the signal of a general attack on the Protestants

throughout France, Bordeaux had its share in the atrocity. Two hundred and sixty-four Protestants were butchered here. In the reign of Louis XIII. in 1635, the weight of taxation gave rise to another insurrection, and some blood was shed in its suppression, which was effected by the resolution and activity of the Duc d'Épernon, governor of Guienne.

In 1649, during the minority of Louis XIV., new troubles arose between the local authorities in the parliament* of Bordeaux and the Duc d'Épernon, son of the one just mentioned, governor of Guienne. Troops were raised, and hostilities ensued both by land and sea. The court supported the Duc d'Épernon: the parliament of Paris supported that of Bordeaux. The commandant of the Château Trompette having fired on the city, that fortress was attacked and taken by the troops of the parliament. A short peace was only the prelude to new troubles between the parliament and the court, at which Cardinal Mazarine was then paramount. Bordeaux was besieged by the royal forces; but peace was concluded in the autumn of 1649 or 1650. When the war of the Fronde broke out, on the return of Cardinal Mazarine to France in 1652, the Bordelois took part with the Prince of Condé against the Cardinal; and their city was consequently blockaded in 1653. The troubles were concluded by a treaty agreed to the same year; and Dureteste, one of the leaders of the Bordelois, was executed; the other chiefs escaped by flight or the intercession of those who had influence at court. New troubles having sprung up in 1675, the parliament of Bordeaux was removed from that city by a royal edict; part of the city wall was broken down; troops were quartered upon the inhabitants; and other measures of severity were resorted to to bridle the population of a city which had given so much uneasiness to the central government. In 1690 the parliament, which had been transferred successively to Condom and La Reole, was re-established at Bordeaux; and the city enjoyed a century of peace until the outbreak of the French Revolution. (*Histoire de la Ville de Bordeaux*, par Devienne.)

When the municipal freedom of Bordeaux was restricted by the advance of arbitrary power under Louis XIV., the city had not by any means reached its present extent. Beyond the walls, which Piganiol de la Force (A.D. 1722) describes as old and strengthened here and there with square and round towers, were the Fauxbourgs les Chartrons (on the river just below Bordeaux), St. Seurin, St. Eulalie, St. Julien, and Ste. Croix. The three forts, Château Trompette, Ha, and Ste. Croix, or St. Louis, served at once to protect the city from foreign attacks, and to restrain the movements of the citizens. The erection of the first and second by Charles VII. has been already noticed; the third was built by order of Louis XIV. after the suppression of the disturbances of 1675. The Château Trompette stood on the bank of the river at the entrance of the port, and was between the city itself and the suburb of Les Chartrons. Louis XIV. caused Vauban to strengthen it by new works; and it remained entire till the Revolution; after which its advanced works were demolished, and a communication thus opened between the Quai des Chartrons and Quais of the city. It was intended to remove the whole building, but its existence was prolonged under the empire of Napoleon. Upon the restoration of the Bourbons the citizens desired and obtained its demolition; and handsome streets or fine plantations and walks now occupy the space not long since covered by barracks, or else quite vacant. The Castle of Ha was towards the land, and was suffered to fall into decay under the monarchy. There only remains of it one tower, occupied as a prison. The fort of St. Louis, or Ste. Croix, has almost disappeared. It stood near the river at the opposite extremity of the town to the Château Trompette. The walls have for the most part been demolished, and the turrets of the antient palace de l'Ombrière are hidden by a triumphal arch and by the custom-house.

Although the disasters of Bordeaux in the seventeenth century deprived it of the power of resistance to the monarchy, yet in local affairs the city appears to have been left in the enjoyment of some degree of freedom. The municipal government was in the hands of a 'maire' and six 'jurats': these jurats were elective officers, and chosen, two each, from the nobility, the body of advocates, and the merchants. These authorities possessed, under the mo-

* The parliaments of France were courts of justice of high authority; they were composed both of laymen and ecclesiastics. They registered the royal decrees and transmitted them to the lower courts.

narchy, greater powers than the municipality has enjoyed since. The police of the town and the public instruction were under their charge, and in respect of the latter Bordeaux seems to have lost rather than gained by subsequent political changes. Even under the arbitrary government of Louis XIV. and his successors these local authorities seem to have acted with considerable judgment and public spirit.

When the Revolution broke out in 1789 the Bordelais partook of the general fervour in the cause of liberty. Their intercourse with the Anglo-American States had prepared their minds for rejoicing in the establishment of a freer government. The city became the capital of the department of Gironde; from which were sent some of the most eloquent members of the Legislative Assembly, Vergniaud, Guadet, Goussonné, and others. From the influence of these men, the party in the Assembly to which they belonged took the name of Girondists. When the Royalists committed great excesses against the Protestants of Montauban, Bordeaux contributed largely to the military force which marched against that city. When the Girondist party was overthrown; and several of its leaders executed, others took refuge in the south of France, and of these Valadi, Salles, Guadet, and Barbaroux, having been discovered, were executed at Bordeaux, and dreadful severities were perpetrated by the deputies whom the Convention sent thither. When the Royalists sought in 1799 to excite a re-action in the south, they opened some communications with their adherents in this city, but the movement was defeated. Under the empire, the inhabitants desired the return of peace, the long interruption to which caused the decay of their commerce; but they received with honours the Emperor Napoleon and his empress Josephine in 1808. The kings of Spain, Ferdinand VII. and his father, Charles IV., passed through the city the same year.

In 1814 the combined English, Spanish, and Portuguese forces, under the Duke of Wellington, invaded France. Their advance encouraged the Royalist party, which had continued to exist at Bordeaux, though in a very feeble state; and on the 12th of March, M. Lynch, the mayor, advanced to meet a detachment of English troops, received them into the city, and hoisted the white flag. When Bonaparte returned from Elba in 1815, and the royal family fled in different directions, the Duchesse d'Angoulême sought to make a stand at Bordeaux; but the national guard and the troops of the line refusing their aid, she was compelled to withdraw. Upon the arrival of the intelligence of the 'Ordonnances' of Charles X. in 1830, the Bordelais broke out into insurrection, and the tricolor was substituted for the white flag of the Bourbons before the news arrived of the successful insurrection at Paris.

The principal increase of the buildings of Bordeaux has taken place towards the north, or, following the course of the river, the lower part of the city, with which the former suburbs of Les Chartrons and St. Seurin are now united. In the older part, that is in Bordeaux properly so called, the streets are narrow and crooked, and the *places* or open spaces irregular; but not so in the new parts, in the Quartier des Chartrons, which is the residence of the merchants, and in the Quartier du Chapeau Rouge, which is on the site of the Château Trompette. The approach by water is magnificent. The width of the Garonne, which is here from 600 to 800 yards wide, twice the breadth of the Thames at London, and the curve which it makes, render the prospect of the city on this side very striking. The dock-yards, the rope-walk, the Custom-house, the Exchange, and the fine buildings of the Quai des Chartrons, extend along the line of the river to a great distance.* The bridge excites astonishment by its length; and the quantity of shipping in this noble port, which will contain 1000 vessels, and admits those of greatest tonnage, adds liveliness to the scene.

The houses are of great magnificence, and fitted up in a manner corresponding to the wealth and commerce of the place. The inhabitants are reputed to live in a style of greater splendour and luxury than in any town in France, Paris only excepted. Many private equipages are kept, and the *fiacres* are superior to the hackney coaches of London. The Place Royale, which is on the bank of the river, is remarkable rather for the buildings which surround it than for its extent. It was formerly adorned with an equestrian statue of Louis XV., but this was overthrown at

the Revolution; and the Place itself assumed for the time the designation of Place de la Liberté. The Place Dauphine is of tolerably regular form and considerable extent, but the houses are not remarkably good. The most noble of the Places of Bordeaux is that formed on the site of the Château Trompette, and called formerly Place de Louis Seize, and now Place de Louis Philippe Premier. This is open to the river on one side, on the other it is crossed by the Cours Douze Mars,* beyond which the Place is enclosed by a range of houses forming a crescent. On the sides are plantations of trees, forming the Allées d'Angoulême and de Berri. This Place or square, including the Allées, is about a quarter of a mile in diameter each way. The most magnificent street is that of the Chapeau Rouge, which is scarcely inferior to any in Europe. In length and breadth it may be compared with Portland Place in London: it contains most elegant shops. There are several Cours, public walks, or streets lined with trees, some of great length: the Cours d'Albret is nearly half a mile long, and the Cours de Tourny and du Jardin Public form together a line of three-quarters of a mile. The Jardin Public itself is partly planted, and partly open, and occupies a space about equal to that of the Place Louis Philippe Premier, but is more irregular in form. The Allées de Tourny consisted of three rows of trees, forming a charming promenade, much frequented in summer evenings: these trees have been destroyed. (Milford's *Observations during a Tour, &c.*, Lond. 1818; Mathews's *Diary of an Invalid*, Lond. 1820; Malte Brun; Balbi; *Plan of Bordeaux*, by the Society for the Diffusion of Useful Knowledge.)

The public buildings are numerous and splendid. The Bourse or Exchange, and the Douane or Custom House, form the two sides of the Place Royale. The Bourse is a square building, inclosing a square court surrounded by a piazza; this court is now converted into a room, being covered with a light glazed dome, which, according to one writer (Malte Brun), is remarkable for its beauty and lightness; while according to another (M. Millin) it injures the effect which the building would otherwise produce. The height of this dome or roof from the floor is seventy-eight feet, and the space which it covers is ninety-eight feet by sixty-five. The Entrepôt or store for Colonial Produce on the Place Lainé, which opens on to the Quai des Chartrons, is remarkable for its extent and beauty; and there are various other buildings for the purposes of commerce which deserve the notice of the traveller. The ship-building yards are towards the southern extremity of the line of quays, and the Victualling Office is on the Quai de Bacalan at the northern end. Ships of war are occasionally built here; a frigate and two brigs were built for Ferdinand VII. of Spain, on occasion of one of the expeditions fitted out against the colonies of South America. The Hôtel de Ville, or Town hall, is of Gothic architecture, and has no particular beauty to recommend it. The Palais de Justice has in its hall a statue of Montesquieu. The Palais or Château Royal is an extensive and handsome building, with a good garden at the back of it: it was formerly the residence of the Archbishop, and was converted to its present use at the restoration of the Bourbons. There are several theatres: the principal one is in the Rue Chapeau Rouge, but fronts the Place de la Comédie, and is on a scale, both as to extent and magnificence, which renders it equal to most in Europe. It was built in the reign of Louis XVI., and is capable of accommodating 4000 persons. Its front has a portico of twelve Corinthian columns, and the frieze is crowned by a balustrade adorned with twelve statues. (Malte Brun; Balbi; Reichard; Mathews, &c.)

The bridge over the Garonne is of stone and about 531 English yards long. It has seventeen arches; the seven in the centre are of the same size, their span being eighty-seven English feet; the arch nearest to the bank on each side is of sixty-eight feet span. The breadth of the bridge between the parapets is fifty feet; the roadway is nearly level. This bridge was begun during the reign of Napoleon in 1811, but was not finished until after the Restoration in 1821. The road from Paris to Bordeaux passes over it; and after crossing the bridge the traveller enters the city through the Porte de Bourgogne (Gate of Burgundy), which was erected on occasion of the birth of the Duc de Bourgogne, grandson of Louis XIV.

* Expilly, in his 'Dictionnaire des Gaules et de la France' (1769), speaks of the Chartrons as perhaps the finest and most extensive suburb of any in Europe. Martinière, at a still earlier date, speaks in the same manner.

* The 12th of March, 1814, was the day on which the municipal authorities surrendered the keys of the town to the English, and embraced the party of the Bourbons.

The difficulty of erecting the bridge was increased by the depth of the river, which in one part is twenty-six feet at low water, with a rising tide of twelve to eighteen feet, by the rapidity of the current, which is often ten feet in a second, and by the shifting and sandy bottom.

Of the ecclesiastical edifices of Bordeaux the cathedral is the most worthy of notice. It is an ancient Gothic edifice, not far from the old castle of Ha. Like some of the other finest monuments of this kind of architecture in France, it owes its origin to the English, though a church stood upon the same spot prior to their domination. It is irregular in its architecture, owing to the various dates at which it was built or repaired, but it commands admiration by the boldness of its arched roof and flying buttresses, the number and elegance of its spires and the richness of its ornaments, especially its altar. The nave is about 85 English feet high, 63 wide, and 193 long from the end of the church to the intersection of the transepts. (M. Millin.) The whole length of the church is about 413 feet. It is adorned with painted windows, sculptures, and bas-reliefs, and is dedicated to St. André, or Andrew. The front is adorned with two spires upwards of 150 feet high; they were restored in 1810 after having become much dilapidated. Near the cathedral is a tower built by one of the archbishops (Pierre) in 1440, and commonly called St. Pey-Berland. The staircase by which it is ascended has 200 steps. It is now used as a shot tower. The church of St. Michel, built by the English in the twelfth century, is a specimen of purer and more regular Gothic architecture than the cathedral. Its tower, built separate from the church in the fifteenth century, after the expulsion of the English, once remarkable for its height, has suffered much from the weather. The church of the Feuillans is only remarkable as the burial-place of Montaigne. Eleven Catholic and three Protestant churches are mentioned in Reichard's *Descriptive Road-Book of France*, and there is a magnificent Jews' synagogue, built in the time of Napoleon.

Bordeaux had an abbey, that of Ste. Croix of the Benedictine order, which was held in commendam when Expilly wrote, in 1762. There were also before the Revolution three seminaries for the education of the priesthood, a rich commandery of the order of Malta, and several religious houses both for men and women. The Chartreuse or monastery of the Carthusians in the suburb of St. Seurin was very magnificent. The church formerly attached to it is richly decorated. The vineyard of this Chartreuse is now converted into a public cemetery, like that of Père la Chaise at Paris.

As a place of trade Bordeaux is eminent. Its commerce in the early part of the eighteenth century was very considerable, and Martinière (*Grand Dictionnaire*) enumerates among the articles of trade dried plums, resin, vinegar, and especially wine, of which in time of peace 100,000 casks were exported annually. This wine was the produce not only of the neighbourhood of Bordeaux, but also of Languedoc and the district of Montauban. The opening of the great Canal du Midi, which united the Garonne with the Mediterranean, tended much to promote the trade of this place. It enables the Bordelais to supply the south of France with colonial produce almost as cheap as the Marseillois. The loss of St. Domingo was injurious to Bordeaux, with which that colony had many important connexions, and to which much of its produce was consigned. But of late years this injury has been more than repaired by the increase of manufacturing industry, especially in articles of perfumery, in the distillation of various liqueurs, &c., in weaving stockings, carpets, and cottons, and the making of earthenware, porcelain, bottles, casks, hats, paper, vinegar, and nitric acid. Among the liqueurs prepared here, the aniseed is much celebrated. There is a royal snuff manufactory near the castle of Ha, in which 500 persons are constantly employed, many refining houses for sugar, some iron foundries, and ropewalks. These manufactures furnish articles for exportation, especially to the French colonies. Cattle, hides, provisions, flour, clover seed, brandy, almonds, prunes, chestnuts, walnuts, cork, turpentine, resin, tartar, cream of tartar, verdigris, linens, and colonial produce are shipped to various parts of Europe, to the French colonies, to America, or to India. Wine is however the staple export of Bordeaux, which is the principal outlet for the wines of the western districts of France, and even of the southern and midland districts. Claret is chiefly shipped at Bordeaux, and is the produce of the neighbouring country. The first growths, those of Château

Margaux, Lafitte, Latour, and Haut Brion, are from the district of Médoc on the left bank of the river Garonne below the city. Bordeaux imports cotton, indigo, tobacco, sugar, coffee, cocoa, and other articles, from the French West Indian colonies; tin, lead, copper, coal, hardware, timber for ship building, masts, hemp, hides, horns, salt beef, and salted salmon from England, Holland, Northern Europe, and America. Many vessels are built, and many hundred workmen employed in the vast building yards which extend along the Garonne. There are at Bordeaux two large fairs, one of which opens on the 1st of March, the other on the 15th of October. (Malte Brun; Balbi; *Dictionnaire Geographique*, par Robert; Macculloch's *Dictionary of Commerce*, &c.)

The shipping belonging to the port of Bordeaux amounted in 1833 to 78,915 tons; in 1831 it was as much as 98,737 tons, including 15 steam-vessels of the aggregate burthen of about 3000 tons. The number and tonnage of vessels that entered the port, exclusive of coasting vessels, in each of the three years ending with 1832, were as follows:—

	1830.		1831.		1832.	
	Ships.	Tons.	Ships.	Tons.	Ships.	Tons.
French Vessels						
Foreign Trade	147	30,197	146	37,298	156	37,072
Trade with French Colonies	97	25,373	103	34,789	74	17,744
Fishing Trade	174	7,357	234	9,165	150	6,536
Foreign Vessels						
From Countries whose flag they bear	217	37,160	83	12,113	254	36,643
From other Foreign Countries	68	11,411	26	4,340	75	12,083
Total	698	111,437	597	77,566	716	100,083

The coasting trade during the same three years to and from the town of Bordeaux was—

	1830.		1831.		1832.	
	Ships.	Tons.	Ships.	Tons.	Ships.	Tons.
Inwards	2526	196,426	2341	168,370	2352	125,000
Outwards	2469	131,421	2141	91,267	2479	126,000

Very few of the vessels belonging to Bordeaux are engaged in the cod fishery, and only two ships are employed in the whale fishery. Between one-fourth and one-third of the French colonial trade is carried on by the merchants of Bordeaux.

The quantities of wine and brandy exported from the Gironde in the same years were—

	Wine.	Brandy.
1829 imperial gallons	9,643,053	2,013,795
1830 " "	6,281,412	687,361
1831 " "	5,370,110	655,193

About a twentieth part of the wine and a tenth part of the brandy were sent to this kingdom.

The population of Bordeaux in 1832 was 100,262 for the city, or 109,467 for the whole commune. The population of the town in 1810 was 93,699, and in 1820, 89,202. The patois of the country is spoken by the Jews, by the uneducated classes, and the population of the outskirts; the other inhabitants speak French.

This city has numerous establishments for education and the promotion of science. It has an Academie Universitaire and a Collège Royal, or high school; schools of architecture, hydrography, and navigation; botany and natural history; drawing and painting; medicine and surgery. There is a school for the deaf and dumb, founded in 1785. When Mr. Milford visited this institution in 1814 it contained 100 persons, chiefly young; the establishment was in high repute. There are several learned societies, as the Academie Royale des Sciences, Arts, et Belles Lettres; La Société Royale de Médecine; La Société Medico-Chirurgicale, &c. The public library contains 110,000 volumes, among which is a copy of Montaigne's *Essays*, with the author's marginal corrections. The botanic garden is maintained by the government for the purpose of naturalizing exotic plants, of which, as well as of indigenous plants, it contains a good variety. There are a museum of antiquities and a gallery of pictures, which occupy several rooms in one of the wings of the royal palace; and a cabinet of natural history, which is well kept up, in the hôtel of the Academie Royale. In the museum of antiquities are the inscriptions and bas-reliefs dug up in the city and its environs. There is an observatory. (Balbi; Malte Brun, &c.)

Bordeaux has some fine hospitals, Le Grand Hôpital de St. Andre is near the cathedral. It is spoken of by M. Millin (*Voyage dans les Départements du Midi*) as well managed, but in too close a situation. There are a lunatic asylum and a foundling hospital. The latter is near the river, in the south quarter of the city; the building is very extensive and commodious; and many hundred children, from infancy up to twelve years of age and more, are sheltered and brought up in it. In 1814 there were 700 children in it, and 2000 out-pensioners in the country. For an account of the Dépôt de Mendicité, and of the state of the wretchedly poor in this city, the reader is referred to the parliamentary report on the state of the foreign poor.

Bordeaux is the capital of the department of Gironde, the largest department in France. The arrondissement of Bordeaux comprehends 1668 square miles, or 1,067,520 acres, and is consequently larger than the county of Kent, but much less populous; it is subdivided into 18 cantons, or 153 communes. It had, in 1832, 245,348 inhabitants. Bordeaux is also the seat of a Cour Royale, or high tribunal, the jurisdiction of which extends over the departments of Gironde, Charente, and Dordogne. It is the capital of the eleventh military division, which includes the departments of Landes, Gironde; Dordogne, Lot, Lot et Garonne, and Basses Pyrénées.

The diocese of Bordeaux is doubtless very antient. Some have attempted to carry its origin as far back as to the first century, but it is scarcely needless to observe that this supposition is unsupported by proof. There were however bishops of this place about the year 300, for one of them assisted at the first council of Arles, held in 314. When the diocesan was raised to the rank of metropolitan is not certain. The archbishops took the style of Primate of Aquitaine, but this dignity was disputed with them by the Archbishops of Bourges. They had nine suffragans, the Bishops of Agen, Angoulême, Condom, Luçon, Périgueux, Poitiers, La Rochelle, Saintes, and Sarlat. At present the diocese is co-extensive with the department of Gironde; and the archbishop has six suffragans, namely, the Bishops of Agen, Angoulême, Luçon, Périgueux, Poitiers, and La Rochelle.

Bordeaux is the native country of some eminent men, the poet Decius Magnus Ausonius; St. Paulinus, bishop of Nola, a father of the fifth century; Berquin, the author of the 'Idylles,' 'L'Ami des Enfants,' &c.; and Gensonné, one of the eminent men of the early period of the Revolution. Montesquieu was born at the Château de Brède, about ten miles from Bordeaux.

BORDELOIS, or BOURDELOIS, the district of which Bordeaux was the capital. It included several subordinate districts, such as the Bordelois properly so called, Médoc, Les Landes de Bordeaux, and many others; and extended on both sides of the Garonne, the Dordogne, and the Gironde. It was bounded on the N. by Saintonge, on the E. by Périgord and Bazadois, on the S.E. and S. by Les Grandes Landes, on the W. side it was washed by the ocean. It is included in the present department of Gironde, to which we refer the reader for a fuller description of its physical features. Suffice it to say here that it includes one of the most important wine countries in France. The immediate neighbourhood of Bordeaux is well watered, no less than six brooks flow through that town, and to the west of it is a marsh the level of which is below that of the streams which cross it. The streams which flow toward the sea being prevented from reaching it by sand hills, form the etangs or pools which line the coast of the Bordelois. A great part of the Bordelois is a mere sandy heath, and in the midst of this are several marshes. [GIRONDE, DEPARTMENT OF.]

BORE, a phenomenon which occurs in some rivers, near their mouth at spring tides. Bore is probably an Indian word, but we cannot suggest any etymology unless it come from the Hindustani 'bôr,' signifying 'deep.' When the tide enters the river, the waters suddenly rise to a great height, in some rivers many feet above the surface of the stream, and rush with tremendous noise against the current for a considerable distance. Sometimes the waters do not subside till they have almost reached the limit of tide-water. As this swell does not occur in all rivers where there is a tide, it is evident that it must be caused by some conformation of the banks or bed of the river, or by both combined. It seems to be necessary, in order that there should be a bore, that the river should fall into an estuary, that this estuary be subject to high tides, and that it contract gradually; and lastly that the river also narrow by degrees.

The rise of the sea at spring tides pushes a great volume of water into the wide entrance of the estuary, where it accumulates, not being able to flow off quick enough into the narrower part. The tide therefore enters with the greater force the narrower the estuary becomes, and when it reaches the mouth of the river, the swell has already obtained a considerable height above the descending stream, and rushes on like a torrent.

In England the bore is observed in some rivers, more especially in the Severn, Trent (Stark's *Gainsborough*), Wye, in Solway Frith, and probably in other rivers and estuaries also, in which the water rises suddenly a few feet, and then rushes on against the current of the river. The bore is called in some parts of England, for instance in the Trent and Severn, the Bagre or Hygre. (Gibson's *Camden*, i. 268; Stark.) The most remarkable bores hitherto described are those of the Ganges and Brahmapootra. In the Hoogly branch of the Ganges the bore is so quick, that it takes only four hours in travelling from Fultah to Nia-serai, above Hoogly town, a distance of nearly 70 m. At Calcutta it sometimes causes an instantaneous rise of five feet, which would occasion great damage among the smaller vessels, if it did not run along one bank only, so that the barges, on hearing the noise which precedes it, can be safely brought to the other side of the river, or to the middle, where the swell is indeed considerable, but not so sudden as to endanger vessels which are skilfully managed. In the channels between the islands at the mouth of the Megna or Brahmapootra, the height of the bore is said to exceed 12 ft., and it is so terrific in its appearances, and so dangerous in its consequences, that no boat will venture to navigate there at spring-tide; but it does not ascend to any great distance in this river, which is probably owing to the great width of the channel of the Megna.

The phenomenon observed in the mouths of the Indus must be of the same kind. Burnes remarks (*London Geog. J.* vol. iii.) that 'the tides rise in the mouths of the Indus about 9 feet at full moon; and flow and ebb with great violence, particularly near the sea, where they flood and abandon the banks with equal and incredible velocity. It is dangerous to drop the anchor unless at low water, as the channel is frequently obscured, and the vessel may be left dry. The tides are only perceptible 75 m. from the sea.' The boats of Alexander experienced these dangerous tides in the Indus (Alexander, vol. i. p. 301), and his historian, Arrian, is the first who has described them. (*Anab.* vi. 19.)

On the N. coast of Brazil, especially on the shores of the provinces Pará and Maranhão, a similar phenomenon is observed in some rivers, and in the channel which extends between the coast and a series of islands from Cape Norte to the mouth of the river Macappá; but it does not occur at the mouth of the Amazon river, as is stated by Malte Brun. This phenomenon, which is called by the Indians *pororóca*, is particularly strong in the Araguari river, which runs into the sea near Cape Norte, and in the rivers Guama and Capim near Pará, and also in the river Meary in Maranhão. The description of the pororóca does not differ materially from that of the bore of the rivers in India, except that it rises to 15 feet, and forms three or even four swells, which follow in rapid succession. If the last circumstance be true, the pororóca must be the effect of circumstances different from those which we have supposed to unite to produce the bore. It is also said that some parts of these rivers being obstructed by shoals, the pororóca is only observable on these shoals, and that it disappears in deep water, for which reason the barges are moored in these parts, where they are only exposed to a strong agitation of the waters. (Rennell's *Hindustan*; Ayre's *Corographia Brasiliica*; and Eschwege's *Brasilien*.)

BORECOLE, a kind of cabbage with curly leaves, and no disposition to form a heart or head. It is chiefly valued for winter use. After the more delicate kinds of vegetables have been rendered unfit for cooking by the severity of frost, this form of the cabbage tribe is in its state of greatest excellence. The interior leaves are thin, tender, and excellent. Several sorts are met with in gardens, the best of which, as being the hardiest, are the *dwarf* or *Colebrook-dale borecole*, and what is called *German greens*, or *Scotch hail*. These plants are raised in all respects like other hardy cabbages, and the duration of their crop is prolonged by sowing the seed at intervals of about a month, commencing at the end of March, and ceasing with the beginning of August. As they are apt to produce long naked stems, it is usual to earth them

up, when full grown, so as to prevent the wind from blowing them over.

Besides the use of borecole for boiling, the fresh leaves are often employed for garnishing other dishes, for which some of them are particularly well adapted, in consequence of the gay colours with which the leaves are often variegated. A variety called the *Buda kail* is also blanched for winter and spring use by putting a flower-pot over the leaves, but it is inferior to sea kail, and more troublesome to procure.

Borecole, like all other cabbages, may be increased by slips of its stem, without the necessity of raising it annually from seed; and, provided care is taken to perform this operation in dry weather, it is attended with almost certain success. This method is however little practised in England.

BOREL and BORELLI. Our object here is to prevent two contemporaries being confounded, who have the same Latin name, Borellus.

Pierre Borel, of Castres, born 1620, died 1689, was the author of the treatise 'De vero Telescopii inventore,' Hague, 1655, a work often cited. He was a physician by profession.

Giovanni Alfonso Borelli, of Naples, born 1608, was also a physician. He wrote 'Euclides Restitutus,' 1628, discovered and translated the lost books of Apollonius [APOLLONIUS PERGÆUS], and also wrote the first theory of Jupiter's satellites, entitled 'Theoricæ Medicorum Planetarum ex causis physicis deductæ' (published in 1666; the title is from Weidler). Weidler and Lalande unite in affirming that he suggested, or rather revived, the notion of attraction in this work. But as Lalande has evidently copied Weidler's words (compare Montucla, iv. 235, and Weidler, p. 513) and as the latter speaks from his own old notes, not having the work before him, we rather incline to believe with Delambre (*Ast. Mod.* ii. 333), who evidently writes with the work before him, and says 'Il n'indique aucune cause physique.' Borelli also wrote 'Observatione dell' Ecclisi Lunare fatta in Roma,' 1675, inserted in the Journal of Rome for 1675, p. 34.

G. A. Borelli was one of the leaders of the iatro-mathematical sect, or of those who have attempted to apply mathematics to medicine. He was sent to Rome to complete his education, where, under the tuition of Castelli, he made such progress, that he was invited at an early age to Messina to teach the mathematics. As he had made medicine as well as mathematics his study, he wrote an account of a malignant fever which raged in Sicily during the years 1647 and 1648, in a treatise entitled 'Delle Cagioni delle Febri Maligni di Sicilia,' Cosenza, 1649, 12mo.

Having become tired of his situation he accepted a professor's chair at Pisa in 1656, where he lectured with great applause. The fame of his abilities procured him the favour of the Grand Duke Ferdinand and Prince Leopold, who obtained him the honour of being elected a member of the Accademia del Cimento. It was about this time probably that he first conceived the design of employing mathematical principles in explaining the animal functions, and he now applied himself diligently to the dissection of animals. Several of his letters on the subject of anatomy, written between 1659 and 1664, are published in Malpighi's posthumous works. In 1658 he published at Pisa a second tract on the nature and treatment of malignant fevers, 'Della Causa delle Febri Maligni,' 4to. His first physiological work, 'De Renum Usu Judicium,' appeared in 1664, with the treatise of Bellini, 'De Structurâ Renum,' Straburg, 8vo. In 1669 he published, in the *Giorn. di Lett.* an essay on the fact, that in most persons the eyes are of unequal power, the one seeing more distinctly than the other, 'Osservazioni intorno alla Virtù Ineguale degli Occhi.' In 1667 he published his 'Tractatus de Vi Percussionis,' Bonon. 4to., of which there is another edition, printed at Leyden in 1686; and soon afterwards the 'Historia et Meteorologia Incendii Ætnæ, 1669; accedit Responsio ad Censuras R. P. Honorati Fabri contra Librum de Vi Percussionis,' Reggii, 1670, 4to. He was present at the eruption of Ætna, having the preceding year quitted Pisa and returned to Messina. The account was written at the request of the Royal Society of London, with which he corresponded, and was printed in their 'Transactions.' In 1670 he published his treatise 'De Motionibus Naturalibus à Gravitate Pendentibus,' a prelude to his great work 'De Motu Animalium,' which did not appear until after his decease.

Being supposed to have favoured the insurgents at the revolt of Messina, to which city he had returned, he was obliged to quit the place. Christina, queen of Sweden, who was then residing at Rome, invited him thither, and he continued to enjoy her patronage till the termination of his life. Whether from poverty or other motives he spent the last two years of his life in teaching the mathematics to youth at the convent of St. Pantaleon called the pious schools, where he died December 31st, 1679, in the seventy-second year of his age.

The first volume of his work 'De Motu Animalium,' which appeared in 1680, Rome, 4to., is dedicated to Christina, and was printed at her expense; the second volume, which completed the book, came out the following year. There are many other editions of this great work, such as those of Leyden, 1685, 2 vols. 4to., with plates; Leyden, 1711, 2 vols. 4to., with the dissertations of John Bernoulli on the movements of the muscles, and on effluence; Naples, 1734, 2 vols. 4to.; at the Hague, 1743, 4to., with the same dissertations; and in the 'Bibliothèque Anatomique' of Manget, Geneva, 1685, folio.

It is on this work that the medical reputation of Borelli depends. In the second part indeed, where he endeavours to explain the action of the heart, lungs, liver, and other viscera on mechanical principles, he is as much mistaken as the other physicians of the iatro-mathematical school; but in the first part he successfully applies the principles of mechanics to the explanation of the active and passive movements of the body. He shows that the bones are true levers, and that the muscles attached to them may be considered as their moving powers; and he proves that the length of the limb, and the distance at which the muscle or power is inserted from the extremity of the limb, or centre of articulation, influence the quantity of force required for the contraction of the muscle, and the execution of the motion: just as in mechanics the length of the lever and the distance of the power from the fulcrum alter the quantity of force required. He demonstrated too, that the muscles act at a disadvantage, considered merely as levers. In his attempts to estimate the force of muscles in numbers, he fails where success was probably impossible. He calculates the propulsive power of the heart to be equal to a weight of 180,000 pounds, a calculation shown to be erroneous by Keil. Though in this and other computations Borelli was shown to have erred considerably, yet his general principles were long applied to; and even the operations of medicines were supposed to be explicable on mechanical principles.

Borelli invented an apparatus by which persons might go a considerable depth under water, remain there, move from place to place, and sink or rise at pleasure; and also a boat in which two or more persons might row themselves under water.

BO'REUS (Latreille), a genus of insects of the order neuroptera, and family panorpidae. This genus, of which only one species is known (*B. hyemalis*), is not only remarkable for its structure, but from the curious circumstance of its having been found in the winter months only, and as said even to have been seen on the Alps running about in the snow: its most common abode however appears to be in moss.

B. hyemalis is about one quarter of an inch long and of a greenish colour, with the legs inclining to red; and, unlike the rest of its tribe, the female possesses no wings, and those of the male are only rudimentary. The antennæ are long and thread-like, the parts of the mouth are reduced into a kind of proboscis; the abdomen of the female is furnished with a large ovipositor: it is rather a scarce insect in this country.

BORGHESE, an Italian family originally from Sava, where they ranked among the patricians of that republic. In the early part of the sixteenth century, Marc Antonio Borghese, a juriconsult of some distinction, settled at Rome, where he was employed as advocate of the papal court. He had several sons and daughters. His third son, Camillo, born in 1562, became pope in May, 1603 (Paul V.). The eldest son, Giovan Battista, married Virginia Lanti of Pisa, by whom he had Marc Antonio Borghese, who by the influence of his uncle the pope was made prince of Sulmona, and grandee of Spain. Paul V. bestowed on him other domains in the papal state. Marc Antonio began the line of the princes Borghese, which still continues. His son Paolo married Olimpia Aldobrandini, the only child of the prince of Rossano, and grand niece to Pope

Aldobrandini (Clement VIII.), and thus the Aldobrandini inheritance came into the Borghese family. Paolo's son, Giovan Battista, prince of Sulmona and Rossano, duke of Palombara, &c., was ambassador of Philip V. of Spain at the court of Rome, where he died in 1717, and was buried in the splendid family chapel at Sta. Maria Maggiore. He left numerous legacies for charitable purposes, and remitted to all his vassals their arrears of rent, fees, and other dues, which they had owed him since the year 1700. His son, Marc Antonio Borghese, was made viceroy of Naples for the emperor in 1721. Another Marc Antonio, a descendant of the viceroy, was Prince Borghese in the second half of the last century, who was well known as a patron of the fine arts, and a great collector of statues and other antiquities, with which he enriched his fine villa on the Pincian Hill. He left two sons, the eldest Don Camillo, who early embraced the part of the French, and went to Paris, where he married in 1803 Marie Pauline Bonaparte, Napoleon's sister, and widow of General Leclerc. He was made in 1805 prince of the French empire, afterwards duke of Guastalla, and lastly governor-general of the departments beyond the Alps, which included the former states of Piedmont and Genoa, then annexed to France. In his new capacity, Prince Borghese fixed his residence at Turin, where he held a sort of court, and seems to have behaved so as to conciliate the inhabitants. He sold to Napoleon his fine museum of the villa Borghese, at Rome, for thirteen millions of francs, the amount of which he received in demesneal estates situated in Piedmont. On the fall of Napoleon Prince Borghese returned to Rome, and afterwards fixed his residence at Florence, where he built a magnificent palace, and lived in great splendour. He gave splendid balls, which were much frequented by foreigners, and especially by the English at Florence. At the same time he did not neglect his Roman residence, and he replaced in great measure by fresh acquisitions of statues and reliefs for his villa, the former collection which is in the museum of the Louvre. Prince Don Camillo died in 1832; his wife Pauline had died in 1825. As they left no issue, his younger brother, who till then went by the title of Prince Aldobrandini, has assumed the title of Prince Borghese.

The House of Borghese has estates in the papal territory, in the kingdom of Naples, and in Tuscany. In the immediate neighbourhood of Rome alone it is possessed of 45,000 acres of ground, besides the estate of Palombara in Sabina. The vast town palace Borghese at Rome has a rich gallery of paintings. Besides the celebrated villa on the Pincian Mount, the family has the fine villa Aldobrandini, called also Belvedere, at Frascati, and other mansions on their various estates. The villa Borghese or Pinciana at Rome has been described in several works. (Montelatici, *Villa Borghese fuori di Porta Pinciana, con gli ornamenti, figure, &c.*, Roma, 1700; Lamberti, *Sculture del Palazzo della Villa Borghese*, and lately by Viaconti, Rome, 1821.)

There have been several cardinals of the Borghese family, one of whom, Scipione, nephew to Paul V., figured in the disputes between that pope and the republic of Venice. He began the Villa Borghese. (Tournon, *Etudes Statistiques sur Rome*; Morari's *Dictionary*; Valery, *Voyages en Italie, &c.*)

BORGIA, or **BORJA**, a family originally from Valencia in Spain. Alfonso Borja was raised to the pontificate in 1445 by the name of Calixtus III. One of his sisters married Geoffroy Lenzoli, likewise a Spaniard, who assumed the name and arms of Borja, there being no male heir of that family. Geoffroy had two sons, one of whom became Prefect of Rome, and the other, Rodriguez, was afterwards Pope Alexander VI. Before his exaltation to the Pontificate Alexander had four sons and one daughter by Vanozia, a woman whose parentage is not exactly known. The eldest son John was made Duke of Gandia in Spain by King Ferdinand of Aragon; the next, Cesare Borgia, is famous in Italian history. When his father was elected pope, in 1492, Cesare was studying at Pisa. He immediately went to Rome, where he was soon after made Archbishop of Valenza in Italy, and afterwards cardinal. Cesare was early noted for his profligacy as well as for his abilities and deep cunning. His younger brother Geoffroy having married, in 1494, Sancia, natural daughter of Alfonso II. King of Naples, was made Duke of Squillace. The arrival of the French under Charles VIII. at Rome, in 1495, obliged

Alexander VI. to forsake Alfonso, and apparently to countenance Charles's invasion of the kingdom of Naples. Charles even required Cardinal Cesare Borgia to accompany him to Naples as hostage for his father's fidelity. Cesare however had not gone farther than Velletri, on his flight from the French camp and return to Rome, when both he and his father turned against the French, after whose retreat from Italy they renewed their connexion with the Aragonese dynasty at Naples. Cesare joined his father and brother (the Duke of Gandia) in waging a war of extermination against the Orsini, Colonna, Savelli, and other baronial families of the Roman state, whose castles and lands they seized. In June, 1497, John Borgia Duke of Gandia was murdered in the night, and his body thrown into the Tiber, by unknown assassins. His brother Cesare was strongly suspected of the murder, as he had expressed his jealousy of his brother's secular rank and honours, while he himself felt no relish for his ecclesiastical dignities. The charge however against Cesare rests on mere suspicion, but his character was so bad, that he was considered capable of any deed, however atrocious. Soon afterwards Cesare resigned his cardinalate, and in 1498 was sent by the pope to France with the bull of divorce between Louis XII. and his wife Jeanne, daughter of Louis XI., after which Louis XII. married Anne of Brittany. On this occasion Louis made Cesare Duke of Valentinois in Dauphiny, from which circumstance he has been generally styled by the Italian historians 'Duca Valentino.' In May, 1499, he married Charlotte, sister of Jean D'Albret, king of Navarre. The French having again crossed the Alps and taken the Milanese, Louis XII. sent a body of troops under Yvon d'Alègre to join those of Cesare Borgia, who was then waging war against the petty Lords of the towns of Romagna, who refused to acknowledge the supremacy of the court of Rome. He began by taking Imola, and afterwards besieged the castle of Forli, which was bravely defended by Caterina Sforza; but the place was stormed, the garrison massacred, and Caterina sent prisoner to Rome, where she was liberated through D'Alègre's intercession. The French being recalled to Lombardy, Cesare returned to Rome, which he entered in triumph in February, 1500, when the pope created him Duke of Romagna and Gonfaloniere of the Holy See. He then turned his arms against Giovanni Sforza, whom he drove out of Pesaro; he likewise took Rimini from the Malatesti. The people of Faenza defended themselves bravely for nearly a year on behalf of their young prince Astorre Manfredi, then fifteen years of age; at last they surrendered on condition that both Astorre and his brother Evangelista should be free. Borgia however sent them both prisoners to Rome, where they were cruelly put to death in 1501. He then attacked Bologna, but was stoutly resisted by Giovanni Bentivoglio, with whom he concluded a truce. In the same year he marched against Florence, but was obliged to desist by peremptory orders from the pope. He next accompanied the French army in its invasion of Naples, under d'Aubigny, and was present at the taking of Capua, where the greatest atrocities were committed by the invaders. Borgia seized upon a number of women whom he sent to his palace at Rome; others were publicly sold. In 1502 he took Urbino and Camerino, where he put to death Giulio da Varano and his sons.

The army of Borgia was composed chiefly of mercenaries; and he had several condottieri under him, such as Vitellozzo Vitelli of Città di Castello and Baglioni of Perugia, Oliverotto of Fermo, Paolo Orsino, and others. These men, either jealous of his power or afraid of his ambition and treachery, deserted his cause while he had gone to Lombardy to meet King Louis XII. On his return to Romagna, Borgia resorted to his usual stratagems. He affected a reconciliation with the revolted condottieri, and induced them to repair to Sinigaglia, where he went himself, accompanied by a troop of men. He there seized upon their persons, except Petrucci of Siena and Baglione of Perugia, who were fortunate enough to escape, and put them to death, together with many of their followers. Sinigaglia was plundered on that occasion. Machiavelli, who was with Borgia as envoy of the Florentine republic, gives a graphic account of the whole tragedy in his characteristic cool and concise style. When Alexander VI. received the news, he arrested Cardinal Orsini and other members of the same family, and ordered them to be put to death in prison. Borgia at this time was the terror of all Central Italy, from the Adriatic to the Mediterranean: he aimed at making himself, with the counts

nance of the pope, independent sovereign of Romagna, the Marches and Umbria. On the 18th August, 1503, Alexander VI. died, after a great supper, at which Cesare was present, who felt himself dangerously ill at the same time, and it has been said, though without sufficient evidence, that they both drank by mistake some poisoned wine which they intended for Cardinal di Corneto. The death of the pope ruined Borgia's fortunes. His troops were defeated by Baglione and Orsini Giordano (Duke of Bracciano), he was driven out of the Vatican, and most of the towns of Romagna rose against him. Cardinal Della Rovere, who was elected pope, and was an old enemy of the Borgias, arrested Cesare and obliged him to give orders to his lieutenants to deliver up the fortresses they held of him. Borgia took refuge at Naples, where he offered his services to Gonzalo of Cordova, who however, notwithstanding a safe-conduct he had given him, arrested him, and sent him prisoner to Spain. He was confined by King Ferdinand in the fortress of Medina del Campo, where he remained about two years. Having found means to escape, he went to his brother-in-law, the King of Navarre, who was then at war with one of his feudatories. Cesare served in the Navarrese army as a volunteer, and was killed in 1707 by a musket-shot at the siege of the small town of Viana near the Ebro. His body was buried without any honours in a church of Pamplona. (Tomasi, *Vita di Cesare Borgia*.)

BORGIA, LUCREZIA, sister to Cesare, was betrothed while yet a child to a Spanish nobleman, but her father having become pope, married her, in 1493, to Giovanni Sforza, Lord of Pesaro, with whom she remained four years, when her father dissolved the marriage, and gave her, in 1798, to Alfonso Duke of Bisceglia, natural son of Alfonso II. King of Naples. On this occasion she was created Duchess of Spoleto and of Sermoneta. She had by Alfonso a son Rodrigo, who was brought up at the papal court, but died young. In June, 1500, Alfonso was attacked on the steps of St. Peter's Church by a party of assassins, and stabbed in several places; he was carried to the pontifical palace, where he died two months after. Cesare Borgia, as usual, was suspected of the crime. Lucrezia then retired for some time to Nepi, but was afterwards recalled to Rome by her father, and intrusted with the affairs of the government during his absence. Such at least is the report of Burchard, the correctness of which however is doubted. (Roscoe's *Dissertation on Lucrezia Borgia*, in the 1st vol. of his *Life of Leo X.* and also Bossi's *Notes* to the Italian translation of that work.) Towards the end of 1501 she married Alfonso d'Este, son of Ercole Duke of Ferrara, and made her entrance into Ferrara with great pomp on the 2nd February, 1502. Gibbon, in his posthumous work, *Antiquities of the House of Brunswick*, has assumed that the negotiations for Lucrezia's marriage with d'Este took place while her former husband was still living, and that he was put out of the way to make room for his successor, an assumption perfectly gratuitous, as the negotiation did not begin till nearly a twelvemonth after her husband's death.

At Ferrara Lucrezia appeared as the patroness of literature. Bembo, who was then at that court, conceived an attachment for her which appears to have been of a platonic nature. (Mazzuchelli: art. Bembo and Lucrezia Borgia.) Ten autograph letters of Lucrezia to Bembo are preserved in the Ambrosian library, together with a lock of her hair which she sent him in one of them, and some Spanish verses addressed to her by Bembo. Bembo continued to correspond with the Duchess of Este long after he had left Ferrara and till 1517. His later letters to her are in the style of respectful friendship. Lucrezia was the mother of three sons by Alfonso, who had a high opinion of her, and intrusted her with the care of the government while he was absent in the field, in which capacity she seems to have conducted herself so as to gain general approbation. In the latter years of her life she became more rigid in her manners and more assiduous in the practice of devotion and charitable works. In short, her behaviour after she became Duchess of Ferrara affords no grounds for censure. Her former conduct, while at Rome with her father, has been the subject of much obloquy, which seems to rest however chiefly on inferences from her living in a flagitious court, where she witnessed the most profligate scenes. Still there is no individual charge substantiated against her. The accusation of incest, besides being improbable, as Roscoe has shown, is not even grounded on Burchard's *Diarium*, but on some epigrams of Pontano and other Nea-

politian poets, the natural enemies of her family, and from whom Guicciardini probably derived the report, for he states it as 'a rumour which it is difficult to believe;' and yet upon this subsequent writers, and Gibbon among the rest, have grounded their assertions of the charge. Of any participation in the murder of her husband, or in any of her brother's atrocious deeds, she has never been accused. At Ferrara she was highly praised by Strozzi, Tibaldeo, Ariosto and other poets of the court. Bembo dedicated his *Asolani* to her, and Aldo Manuzio, in the dedication prefixed to his edition of Strozzi's works, speaks of her as an accomplished princess and a liberal patroness of his art; the historians Giralaldi, Sardi, Libanori, mention her in terms of the highest commendation. All this can hardly be mere flattery, for even flattery from so many different writers could not have been lavished on a person so profligate and debased as she has been represented. A drama full of horrible but gratuitous fictions concerning her life was published and performed at Paris in 1833, under the title of 'Lucrece Borgia.' A likeness of Lucrezia is found in a medallion in the collection of R. Heber, Esq. Lucrezia died at Ferrara in 1568. (Roscoe, Bossi, and Mazzuchelli.)

John Duke of Gandia left a son who perpetuated the family of Borgia. One of his descendants was canonized as St. Francis de Borgia. Another Borgia was Viceroy of Peru, and died in 1658. Lastly, Cardinal Stefano Borgia (Prefect of Propaganda), a learned and amiable man, who died in 1804, while accompanying Pius VII. on his journey to Paris. The Museum Borgia at Velletri, rich in Egyptian and Mexican antiquities, belonged to this cardinal. He has left several learned works, among others a *History of Benevento*, in 3 vols. 4to.; *De Cruce Veliterna Commentarii*, Roma, 1780; *Basirilievi in terra cotta dipinti in varij colori trovati nella città di Velletri*, Roma, 1785; *Storia della città di Tadino*; *De Cruce Vaticana*, &c.

BORGNE, LAKE. [MISSISSIPPI.]

BO'RGGO, an Italian appellative, which occurs in the name of several towns, as Borgo San Donnino, Borgo Taro, &c. Borgo is a word of Teutonic origin, 'burg,' which is said to have been first adopted by the Romans on the German frontiers of the empire to signify an assemblage of houses not enclosed by walls, Burgus or Burgum. It was afterwards applied to the fortified villages of the German soldiers in the service of Rome. Vegetius (lib. 4, c. 10) calls Burgus 'Castellum Parvulum.' The Germanic nations, in their invasions of Italy, introduced the appellation into that country, where it was generally applied to the houses and streets built outside of the gates of a walled town, corresponding to the Roman suburbia. The French *fauxbourg* had a similar meaning, being derived from *foris burg* or *foris burg*, a 'burg outside of the town.' Several districts in the Italian cities have retained their original name of Borgo, although they are now enclosed within the walls. The district of Rome which is between the bridge of San Angelo and St. Peter's church is called Il Borgo. So there are several districts at Florence called Borgo, as Borgo dei Pinti, because they were originally outside of the city walls. There are however also towns standing by themselves which have the name of Borgo, and were colonies built by the citizens of some neighbouring town (such as Borgoforte on the Po, which was built by the citizens of Mantua in the beginning of the thirteenth century), or they were originally small assemblages of houses built near the castle of some feudal lord, which have gradually become towns after the castle has disappeared.

Borgo San Donnino, between Parma and Piacenza, formerly a feudal castle of the house of Pallavicini, is now a town of 5000 inhabitants, with some fine buildings and an old cathedral. It is the chief town of the province of the same name, and a bishop's see; has a secondary school or college with forty-five boarders, two elementary schools for boys, and several manufactures.

Borgo Taro is a small town also in the duchy of Parma, situated in the Apennines near the sources of the river Taro, 30 m. S.W. of Parma, with about 2000 inhabitants, a secondary school with twenty-five boarders, and two elementary schools. A mountain road, practicable only for mules, leads from Borgo Taro over the Apennines to the village of Centocroci to Chiavari in the Riviera of Genoa. The castle of Compiano near Borgo Taro was one of the state prisons of the French empire under Napoleon.

Borgo San Sepolcro, a town of the province of Arezzo in Tuscany, in the valley of the upper Tiber, and close upon the frontiers of the papal state. It originated in the tenth century with two pilgrims, who having been to Palestine brought back a piece of the stone of the Holy Sepulchre, and built a hermitage on this spot. The fame of their sanctity attracted many people, and a number of houses were built, to which the name of Borgo San Sepolcro was given. The town was enclosed by walls, and, after long retaining its municipal independence, submitted in the sixteenth century to Cosmo I., grand duke of Tuscany. It is a bishop's see, and has several churches, besides the cathedral, with good paintings, and a seminary for clerical students.

There are other towns in Italy called Borgo, such as Borgo San Dalmazio near Cuneo in Piedmont, 3000 inhabitants; Borgo Sesia in the province of Valsesia, with 2500; Borgo Vercelli in the province of Novara, with 2000; Borgo d'Ales in the province of Vercelli, with 2400; Borgomanero in the province of Novara, with 6000.

There are also several places called Borghetto, 'small Borgo,' in the papal state.

BORGOGNO'NE, JA'COPO CORTE'SI, called from his place of birth Borgognone, was born in 1621 in the city of St. Hippolite, in Burgundy (Ital. Borgogna). His father, Giovanni Cortesi, was a painter of sacred subjects, and very successful in his way. Owing to an accidental temptation, Jacopo went into the army for three years; after which he returned to his art, and studied at Bologna, where Guido, then at the height of his fame, was residing. Guido, happening to see a picture of his in a window, inquired into his circumstances, and took him home with him; which, during the remaining six months that he stayed in Bologna, afforded him a fine opportunity of improving his colouring. Here he occasionally saw Albano, from whom, among other things, he learned this maxim, 'That a painter, before setting to work upon any subject, should recal to mind something which he had seen in reality: a saying which Jacopo kept constantly in view. Baldinucci, having invited him to his house many years after to see some of his own pictures, which he had purchased, asked him in a burst of admiration, 'How he had given his battles so much truth, with expression so just, and accidents so various?'—he replied, that all he had painted he had really seen.

Borgognone subsequently realized a handsome independence, and visited his native country for three years, but returned to Italy, and painted for a considerable time in Florence with great reputation. In 1655 he conceived himself under a call to renounce the vanities of the world, and accordingly betook himself to Rome, where he begged to be admitted into the order of Jesus, and was received as a novice. His feelings were doubtless modified by early association and the kindness he had met with from religious orders. During his novitiate he painted, at the suggestion of his fellow-monks, pictures of sacred subjects, but could not keep entirely from such as suited his peculiar style. In such esteem was he held by the community to which he belonged, that the second year of novitiate was dispensed with; and he never gave his order reason to repent of their confidence. His religious profession however did not make him idle, and he worked as vigorously as ever. He died of apoplexy, November 14th, 1676.

As he painted with great facility and rapidity, his pictures are very numerous. His execution was in dashing strokes, the colour laid on thick, and better suited therefore to a distant than a close view, a manner which has been ascribed to his living with Guido, and to his seeing the works of Paolo Veronese when at Venice; but partly ascribable perhaps to his habit of sketching before he was thoroughly practised in the art.

His pictures have excellencies corresponding to the peculiarity of his style. 'If,' says one of his biographers, 'they do not convey sounds, they express with horror to the mind the cries of the buffeting soldiers, the shrieks of the wounded, the lamentations of the death-stricken, the thunders of the bombarding, the bursting of mines, and truly there is a freedom of design, a force and suddenness in the action, a unity of composition, with a most natural variety in the accidents, which seem to show the gallery-visiter a real battlefield.'

Jacopo had a brother, Guglielmo Cortesi, also called Borgognone, a painter of merit, who sometimes assisted his brother in his paintings, but he never attained the same emi-

nence. He was a pupil of Pietro da Cortona, but rather modelled himself after the style of Carlo Maratta.

BORING. [CANNON, GUN, MINING, ARTESIAN WELLS, and other operations of which boring forms a part.]

BORKUM, an island about 14 m. in circumference, situated in the North Sea about 18 m. from the coast of East Friesland, and off the mouth of the Ems, is comprehended in the circle or bailiwick of Pensum, which forms part of the Hanoverian province of Aurich. The middle of the island lies so much below the level of the sea, that the water at high tide flows through the island and divides it into two parts. Borkum is a parish, with a village and church, and about 500 inhabitants, who derive their subsistence from husbandry, cultivating vegetables and fruit, rearing cattle, fishing, and serving on board of Dutch and Hamburg whalers. The light-house on the island, which is built of stone and provided with pumps and parabolic reflectors, is about 150 ft. high, and serves as a landmark both by day and night for ships navigating these seas or making for the Ems; it is in 53° 35' N. lat., and 6° 38' E. long.

BORLASE, WILLIAM, was born at Pendeen, in the parish of St. Just in Cornwall, Feb. 2nd, 1695-6, where his family had been settled from the reign of King William Rufus. He was the second son of John Borlase, Esq. of Pendeen: he was placed early at school at Penzance, where his master used to say 'he could learn, but did not;' and was thence removed in 1709 to Plymouth under the care of the Rev. Mr. Bedford, at that time a master of eminence; he was entered of Exeter College, Oxford, in March 1712-13, where he took his bachelor's and master's degrees. He was admitted into deacon's orders in 1719, and was ordained priest in 1720. In 1722 he was instituted by Dr. Weston, bishop of Exeter, to the rectory of Ludgvan in Cornwall, on the presentation of Charles duke of Bolton; was married in 1724 to Anne, eldest surviving daughter and coheir of the Rev. William Smith, rector of the parishes of Camborn and Illuggan; and in 1732 presented by Lord Chancellor King to the vicarage of St. Just, his native parish, where his father had considerable property. This vicarage and the rectory of Ludgvan were the only preferments he ever received.

At Ludgvan, a retired but delightful situation, Mr. Borlase soon recommended himself as a clergyman, a gentleman, and a man of learning. His mind being of an inquisitive turn, he could not survey with indifference the peculiar objects which surrounded him. The parish of Ludgvan contained rich copper-works, abounding with mineral fossils, which Mr. Borlase collected from time to time; and his collection increasing by degrees, he was encouraged to study the natural history of his native county. While engaged in this design he could not avoid being struck with the numerous monuments of remote antiquity in several parts of Cornwall, which had till then been nearly neglected. Enlarging his plan, he determined to gain as accurate an acquaintance as possible with the religion and customs of the antient Britons, to which he was encouraged by several gentlemen of his neighbourhood, who were lovers of British antiquities, particularly by Sir John St. Aubyn and the Rev. Edward Collins, vicar of Garth. His friendship and correspondence also with Dr. Lyttelton, then dean of Exeter, and afterwards bishop of Carlisle, and with Dr. Milles, who succeeded Dr. Lyttelton both as dean of Exeter and president of the Society of Antiquaries, were a further stimulus to the prosecution of his studies.

In 1750, being at London, he was admitted a fellow of the Royal Society, into which he had been chosen the year before, after having communicated a paper on the nature and properties of spar and sparry productions, particularly on the spars or crystals found in the Cornish mines, printed in the *Philosophical Transactions*, vol. xlvi. p. 250. His next Memoir was an account of the great alterations which the Islands of Scilly have undergone since the time of the antients who mention them, as to their number, extent, and position. *Phil. Trans.* vol. xlviii. p. 55. Various other communications from him, some relating to the antiquities, some to the natural history of his native county, are in volumes xlvi. p. 86; xlix. 378; l. 51, 499; li. 13; lii. 418, 507; liii. 27; liv. 59; lvi. 35; lviii. 89; lix. 47; lx. 230; lxi. 195; lxii. 365; between the years 1752 and 1771.

The Antiquities of Cornwall were published at Oxford in February, 1753, under the title of 'Observations on the Antiquities, Historical and Monumental, of the County of

Cornwall,' fol. Oxford, 1754. It passed through a second edition at London in 1769. It was at the request of Dr. Lyttelton that his memoir on the Scilly Islands was published as a distinct treatise in an enlarged form, entitled 'Observations on the Antient and Present State of the Islands of Scilly, and their importance to the Trade of Great Britain;' in a Letter to the Rev. Charles Lyttelton, LL.D., dean of Exeter, 4to. Oxf. 1756.

Mr. Borlase printed at the Oxford press his 'Natural History of Cornwall,' for which he had been many years making collections; it was published in folio in April, 1758. He presented a variety of fossils and remains of antiquity, which he had described in his works, to the Ashmolean Museum, to which he continued to send every thing curious that fell in his way. In 1766 the University of Oxford conferred upon him the degree of LL.D. by diploma.

Dr. Borlase continued to exert his usual diligence in his pastoral duties and the study of the scriptures. He made a paraphrase of the books of Job and the books of Solomon, and wrote some other pieces of a religious kind. He occupied himself in superintending his parish, and particularly the improvement of the high roads, which were more numerous than in any parish in Cornwall. The belles-lettres and painting also formed part of his amusements. The correction and enlargement of his History of Cornwall for a second edition engaged some part of his time; and when this was completed he minutely revised his 'Natural History.' His 'Private Thoughts concerning the Creation and Deluge,' after being sent to the printer, were recalled when a few pages were printed, chiefly owing to his severe illness in Jan. 1771. From this time his health began to decline. He died Aug. 31st, 1772, in his seventy-seventh year.

Dr. Borlase corresponded with many of the most eminent men of his time. Nichols, in his 'Literary Anecdotes of the Eighteenth Century,' says that there is still extant a large collection of Letters written to our author by Mr. Pope, whom he furnished with the greatest part of the materials for forming his grotto at Twickenham, consisting of such curious fossils as the county of Cornwall abounds with. Dr. Borlase's name in capitals composed of crystals is still there. On this occasion a very handsome letter was written to the doctor by Pope, in which he says, 'I am much obliged to you for your valuable collection of Cornish diamonds. I have placed them where they may best represent yourself, in a shade, but shining.' (See Dr. Borlase's Life of himself, printed with Additions, in Nichols's *Literary Anecdotes of the Eighteenth Century*, vol. v. p. 291—303; *Biogr. Britann.*, Kippis's edition; and Chalmers's *Biogr. Dict.* vol. vi. p. 119—122.)

BORMIO, a town in the prov. of Sondrio in the Lombardo-Venetian kingdom, near the sources of the Adda, and at the foot of the Rhetian Alps. The great Orteler-Spitz, one of the highest summits of the Alps, rises near Bormio. The new road over the Stilfer Joch, or Mount Stelvio as the Italians call it, passes round the N. W. flank of the Orteler. This fine road, which was begun by the Austrian government in 1819 and finished in 1825, forms the most direct communication between Milan and the Tyrol, leading from Bormio in the valley of the Adda to Glurens in that of the upper Etsch (Adige), and from thence to Innsbruck over the Brenner. The highest point of the road on the Stilfer Joch is 9000 ft. above the sea, and consequently considerably higher than any of the other roads over the Alps into Italy. The road is wide and the ascent easy. It is well secured by parapets on the side of the precipice, and protected in many places by paravalanches, or strongly built wooden galleries, with roofs and supports massive enough to resist and break the descending avalanches. Stations of cantonieri are established at intervals to keep the road in repair, and clear away the snow. The bridges on this road are remarkable for their solidity, and the tunnels cut through the rock for their width and length. The road cost about two millions of francs.

Bormio is a town of about 3000 inhabitants. It had been in decay ever since 1799, when it was partly burnt by the French, but the opening of the new road has given it fresh activity. The country around is not productive, and the climate is cold; but it has good pastures. Some barley and rye and excellent honey are the principal productions. Bormio has several churches: that of St. Antonio contains some good paintings by Canelino, a native of this place. The mineral-water baths of San Martino near Bormio are

frequented by invalids from the Tyrol and the Valtelina, but the accommodations are bad. In the Valfurva, E. of Bormio, is the chalybeate spring of Santa Caterina, which is also in great repute. There is a rich iron mine in the same neighbourhood.

Bormio, called by the Germans Worms, was formerly the head town of a bailiwick subject to the Grisons, from whom it was taken by Bonaparte in 1796, together with the neighbouring Valtelina and Chiavenna, and annexed to Lombardy. For the road of the Stilfer Joch see Latrobe's *Pedestrian Tour*, and Mercsey, *Le Tyrol et le Nord de l'Italie*.

BORNEO is the largest island in the Indian Archipelago, and the largest in the globe, if we except the continent of Australia. It occupies the centre of the Indian Archipelago, and is divided by the equator into two nearly equal parts, though the most southern point, Cape Salatum, is only a little more than four degrees S. of the equator, and the most northern, Cape Sampanmangio, extends a few minutes to the north of 7° N. lat. The most eastern extremity, Cape Konneecogan, reaches nearly 119° 30' E. long.; and the most western shore, about one degree N. of the equator, is in about 109° 30' E. long.

The seas which enclose Borneo are portions of the Indian Ocean, but being for the most part separated from one another by chains of islands and united by straits, particular names have been given to these parts of the Indian sea. The sea between Java and the islands to the east of it, on one side, and Borneo on the other, is called the sea of Java or Sunda; the latter name comes from the straits of Sunda, which divide Java from Sumatra, and afford the safest and most frequented passage from the W. to China and Singapore. The Java sea is divided from the southern portion of the China sea, which encloses the western and northern shores of Borneo, by the islands of Banca and Billiton, and united to it by the straits of Banca and Billiton and the Carimata Passage, which latter divides Borneo from Billiton island. The China sea affords the safest passage to China, being in its centre and along the shores of Cochin China comparatively free from rocks and islands. To the east of Borneo extend the Mindoro sea, the sea of Sooloo or Celebes, and the straits of Macassar. The Mindoro sea is separated from the China sea by the large island of Palawan and the smaller islands of Calamianes and Busvagon; Busvagon is separated from the island of Mindoro by the straits of Mindoro. The sea of Celebes is separated from the sea of Mindoro by an extensive chain of smaller islands, called the Sooloo Islands. The straits of Macassar unite the sea of Celebes with the Java seas, and divide Borneo from Celebes.

The greatest length of Borneo, from Cape Sambar, the most S.W. point, to Cape Sampanmangio at its most N. extremity, is about 850 m.; its greatest breadth in the parallel of Cape Konneecogan 680 m., and the surface of the whole island is estimated by Walter Hamilton at 202,000 sq. m. But this is evidently somewhat below the mark, for if we consider that the portion of the island which lies to the S. of 2½° N. lat. extends on an average 530 m. in length and a breadth of 450 m., it gives an area of nearly 250,000 sq. m. To this must be added that portion which runs in the shape of a peninsula to the N. E. from 2° 30' N. lat. to Cape Sampanmangio, which with an average width of 120 m. has a length of upwards of 300, and consequently an area of upwards of 36,000 m. The whole surface may therefore be about 286,000 sq. m., or nearly twice the area of the British Islands, and one-half that area besides.

None of the large islands, except New Guinea, are less known to Europeans than Borneo, though the Dutch have had an establishment on its S. coast for upwards of half a century. This circumstance is doubtless owing to its peculiar figure, which is one mass of continuous land, with at any considerable indentation. Our knowledge of this island is limited to the shores, a few harbours and mouths of the rivers, and to the country a short distance inland from them. The eastern shores south of Cape Konneecogan, the western extent of the southern shores, and the western up to Cape Dattu, are low, and far above thirty miles inland marshy and alluvial, intersected here and there by small hills. The coast which runs in a N.E. direction from Cape Dattu to Cape Sampanmangio is seldom visited by European vessels, on account of the perilous navigation among the numerous islets and rocks which line it to a considerable distance from the shore. This fact leads us to suppose that it is rocky; which is certainly the case with the Dutch

eastern peninsula from the neighbourhood of Cape Sampanmangio as far as Cape Konneeoogan.

The interior of the country is very little known. Till lately it was supposed that it was covered with extensive ranges of mountains of considerable height, but this supposition has not been confirmed by the Dutch expedition, which was undertaken in 1823 from the western shores for the purpose of getting possession of the gold and diamond mines. The expedition, it is said, advanced about 300 miles inland without meeting with such obstacles as mountains would have opposed to their progress. But the north-eastern portion of the island is known to contain mountains which rise to a considerable elevation. The rivers are numerous and of considerable size at their outlets, but their length is not known, as none of their sources have been visited. They are commonly navigated fifty miles and upwards from their mouths, but not farther, which may lead us to conjecture that at this distance from the coast the land has a considerable rise. The largest rivers seem to be the Banjarmasin and Borneo on the southern coast, the Pontianak and the Sambas on the western; another Borneo on the north-western, and the Passir on the eastern. It is probable that the island contains some considerable lakes, and it is remarkable that here, as in the peninsula without the Ganges, the natives assign an extensive lake as the common source of all the large rivers. Towards the northern extremity, and at no great distance from Cape Sampanmangio, is the lake of Keeneebaloo, which is said to be 100 miles in circumference, with an average depth from five to six fathoms. The Dutch, in their late expedition, came also to a large lake, called Danao Malayu, which extends from twenty-five to thirty miles in length, with an average breadth of above twelve. But its situation is not yet known with sufficient accuracy to be laid down on the maps.

The climate of this island, as far as it is known, is very hot and moist, owing to the extensive marshes along the coast, and the wide-spreading forests which cover the hilly country at the north-eastern extremity. It is particularly destructive to Europeans. In the districts situated on the western shores the wet season takes place during the south-east monsoon, from April to September; but on the northern shores, along the straits of Macassar, and in the Java seas, it occurs with the north-eastern monsoon, from September to April. The average summer-heat is vaguely estimated at 84° Fahrenheit.

A country with a good soil and abundance of moisture, situated under the equator, must be extremely rich in vegetable productions.

Most, if not all, of the tribes inhabiting Borneo cultivate the ground. Rice (*oryza sativa*), being the chief article of food over nearly the whole of the island except the eastern coast, is principally cultivated. Where the land can be flooded, two crops are generally got within the year. The cultivation does not depend on the seasons, and therefore within the compass of a few acres rice may be seen in every state of progress. In one little field, or rather compartment, the husbandman is ploughing or harrowing; in a second he is sowing; in a third transplanting; in a fourth the grain is beginning to flower; in a fifth it is yellow; and in the sixth the women, children, and old men are busy reaping. It yields twenty-five to thirty-fold of the seed. Maize (*Zea Mais*), which yields a hundred-fold, is not much cultivated. Two kinds of pulse, *Phaseolus Max* and *Phaseolus radiatus*, are cultivated extensively. Of roots they cultivate especially yams (*Dioscorea alata*), of which they grow many varieties, which are planted in the poorer districts, sweet potatoes or batatas, the kantang (*Ocymum Tuberosum*), the mandioca (*Iatropa manihot*), and a species of dioscorea (*D. triphylla*), which they call gadang, and which also grows wild in every part of the island. The *Arum esculentum*, Lin., is cultivated in the upland soils.

The culinary plants most extensively cultivated are the cucumber and the chili or capsicum. Both are used in immense quantities, especially the latter, which is as universally consumed by the natives as salt. There is a great consumption of oil as an article of food, and as the natives have no substitute from the animal kingdom, they cultivate many plants which produce oil. Such are especially the coco-nut tree (*cocos nucifera*), the ground pistachio (*Arachis hypogaea*), the ricinus or palma Christi, the sesamum, and a tree called by them kânari, the kernel of which is as delicate as a filbert and abounds in oil. The sago palm (*Me-*

troxylon Sago) is not cultivated in the southern and west ern districts, because its medullary matter, which serves as bread, is less valued than rice; but in several parts of the eastern coast, where the soil is less favourable to the cultivation of rice, it is planted very extensively. According to the calculation of Crawford, an English acre planted with sago-trees yields above 8000 pounds of raw meal a year.

The areca palm is extensively planted, and its fruit eaten both in its unripe and mature state; in the latter it is a great object of commerce. Another palm-tree cultivated here is the sagwire or gomuti (*Borassus flabelliformis*), which affords the principal supply of that saccharine liquor, which is used as a beverage and for the extraction of sugar; the interior of the fruit is used by the Chinese as a sweetmeat. The betel pepper (*Piper betel*) is another article of agriculture, and also the gambir (*Nauclea Gambir*), a climbing plant, of which the inspissated juice, also called gambir, is similar to the catechu, and is an article of extensive traffic. Tobacco is raised everywhere in small quantities, for domestic consumption only.

Of fruit-trees there are the banana (*Musa Paradisiaca*), and the bread-tree (*Artocarpus incisa*). The banana grows in the greatest perfection, and at least thirteen distinct species are cultivated. The bread-fruit is common, but held in very little estimation. There are two varieties, one with seed and another without: the latter is the true bread-fruit, and is cultivated in some districts; the former grows wild. Fruits, more strictly so called, are found in Borneo in the greatest variety, and some of the richest and finest on the globe. The greater number are indigenous; but several of the most delicate of other equatorial regions have been introduced and are now naturalized. The mangustin is considered the most delicious of all fruits. It is a peculiar production of the Indian islands and the Malay peninsula, and all attempts to propagate it elsewhere have proved unsuccessful. The natives give the preference to the durián (*Durio Zibethinus*), another indigenous tree of these islands, which will grow nowhere else. The fruit of one species is larger than a man's head. Besides these, there are two species of jack trees (*Artocarpus integrifolia*), the mango (*Mangifera Indica*), some species of orange and lemon-trees, which are partly indigenous and partly exotic; the pumpleenos (*Citrus decumana*), which is indigenous; the citron; the pine-apple, which though three times the size of those raised in our hothouses, is not much esteemed by the natives, nor by the resident Europeans; the jambu (*Eugenia*), which is indigenous, and found in a wild state; the guava (*Psidium pomiferum*), the papaya (*Carica papaya*), the custard-apple (*Anona squamosa et reticulata*), the cashew tree (*Anacardium occidentale*), the dukuh, next in esteem to the mangustin and durián, the rambutan (*Nephelium lappaceum*), the pomegranate (*Punica granatum*), the tamarind (*Tamarindus Indica*), and some others.

The horticulture of Borneo comprises also the calabash, the gourd, the pumpkin, the musk-melon, the water-melon, and a variety of cucumbers, most of which are exotic, and not distinguished either by size or flavour, except the cucumbers. The attempts to introduce the fruits of temperate countries have not been successful.

Cotton is extensively cultivated. Two species of it are known, the shrub-cotton (*Gossypium herbaceum*), and the tree-cotton (*Gossypium arboreum*): of the former there are many varieties. Many plants which have a fibrous bark afford materials for cordage. Such are the rami (*Ramium mayus*, Rumph.), a species of urtica or nettle, which is cultivated and used for almost every purpose for which we use hemp, but particularly for the manufacture of fishing-nets; ganja or hemp (*cannabis sativa*), not employed in the manufacture of cordage, but used for its juices as a narcotic; the bagu (*gnatum gnemon*), the waru (*Hibiscus tiliaceus*), the cocoa-nut tree, the sagwire, or gomuti. The most useful however in domestic and rural economy is the rattan (*Calamus Rotang*), which is constantly used for cordage. There are a great many varieties, from the size of a goose-quill to several inches in diameter. One variety is cultivated on account of its fruit; but the others grow wild, and afford an abundant supply for domestic use and exportation. The bamboo is found everywhere, both in the wild and cultivated state.

Among the forest-trees are two kinds of palm-trees, the nibung (*Caryota urens*), and the nipah (*Coccos nypu*), of which the former is the true cabbage-tree. The teak is not found in Borneo, and the common timber-trees are the

bitanger, a species of uvaria, the marboa (*Metrosideros*), the pinaga, and the surem. Other trees are used for cabinet or fine work, but most of them have not yet found a place in our botanical catalogues. The forests of Borneo contain many trees which yield gums or resins useful in the arts. The most important of these products is dammar, a kind of indurated pitch or turpentine, which exudes spontaneously from the pine-trees of that name through the bark, and is either found adhering to the trunk and branches in large lumps, or in masses on the ground under the trees. It is used for all purposes to which we apply pitch, but chiefly on the bottoms of ships and vessels. It is exported in large quantities to the continent of India, especially to Bengal and China. In different districts vines or trailing plants grow, the milky juices of which form, when inspissated, a true caoutchouc.

Plants which yield dyeing materials are numerous. Indigo, the most important and valuable, grows wild, and is also cultivated. Next to it the safflower (*Carthamus tinctorius*) deserves notice, and then the arnotto (*Bixa Orellana*). Turmeric (*Curcuma longa*, L.) is cultivated to a considerable amount, but less used for dye than as an aromatic for seasoning food. Dyeing woods are the sappan, or Brazil wood (*Cæsalpinia Sappan*), but it is less esteemed than that of Luconia or Sumbawa. The root of the mangkudu (*Morinda*) is extensively employed as a dye-stuff for giving a red colour. The antiaris, or poison-tree (*Upas*), is also found in the forests of Borneo, and its inner bark is used by the natives for wearing apparel.

The sugar-cane is indigenous, and extensively cultivated by the natives, and still more by the Chinese, who also distil arrack from it. The pepper vines (*Piper nigrum*, Lin.) are cultivated, but grow also in a wild state, and their produce forms a considerable article of exportation. There are also some species of nutmeg-trees, but their produce is not equal to that brought from the Banda islands. The culitlawan (*Laurus culitlawan*, Lin.) yields the clove-bark, which name is derived from the resemblance of its taste and fragrance to that of the clove: this bark is exported to China. The cayaputi (*Melaleuca leucodendron*), which in less warm climates is only a shrub, here becomes a tree, and yields the cajeput-oil; it is only found on the south-eastern coast. The cinnamon is not found here, but the cassia-tree is common, especially in the northern districts. Ginger is widely diffused, and in pretty general use among the natives, but in quality it is inferior to that of Malabar or Bengal.

Among the most remarkable vegetable productions of Borneo and the adjacent island of Sumatra is the camphor-tree (*Dryobalanops camphora*, Colebr.). It is found nowhere in the world but in these two islands, and even here not to the south of the line, nor beyond the third degree of N. lat. It is a large forest-tree, used for building vessels, and the camphor is exported, especially to China. The price of this camphor, compared with that of Japan, is in the ratio of 20 to 1. The frankincense or benzoin (*Styrax benzoin*) is collected from a tree growing in the same districts, though it is occasionally found to the S. of the line. It is an object of cultivation, and the gum is obtained by making incisions in the bark; the greatest part of the produce is exported to Mohammedan and Catholic countries. The incense called aquila wood, eagle wood, or lignum aloes, is collected in some of the eastern districts.

The elephant inhabits only the north-eastern parts of the island, especially the peninsula of Unsang, the most eastern part of the globe where this animal is found; the rhinoceros also is said to exist here. The royal tiger is not known, but the leopard is common. Among the wild animals the buffalo attains here its greatest size and strength. There are also deer and wild hogs. The flesh of the buffalo, as well as of the two latter animals, is jerked, and exported under the name of *dendong* to China. The variety of the ape and monkey tribes is endless; and among them is the orang-outang, or the 'man of the woods,' as the name implies.

Of domestic animals only horned cattle and hogs are numerous. There are neither sheep nor asses, and horses seem not to be common. The flesh of the ox is jerked, and with the horns and hides sent to China, the latter always in the hair and not tanned. Common fowl and ducks abound in most places.

Among the numerous birds the most remarkable is the *hirundo occulenta*, whose nests are carried to China, and fetch an enormous price. This bird however is only found

on the north-eastern extremity on the peninsula of Unsang and its neighbourhood.

Both sea and river fish abound, particularly the former. The waters which surround this and the neighbouring islands are so tranquil, and the numerous banks afford the fish upon them such abundance of food, that no part of the world has a better supply of fine fish, especially where the shores are flat. The edible fish are here very numerous, among which the pomfret, the calcap, and the sole are the most delicate. A great variety of fish are dried in the sun, and form a considerable article of commerce; fish in this state is an article of as universal consumption among the Indian islanders as flesh in cold countries. Some kinds of fish, especially shrimps, are reduced to a state half pickled and half putrid, and form an article of internal commerce under the name of blanchand. But the tripang awala, or sea-slug (holothurion), is a valuable article of exportation to China. This animal is only found among the rocks which line the north-western and north-eastern coasts of Borneo, and extends hence eastward to New Guinea, and southward to the north-eastern shores of Australia, where the sea is dotted with numerous coral reefs. Besides the tripang, fish maws and shark's fins are also exported to China, where they are considered great delicacies. Tortoises are very abundant, especially on the northern and north-eastern coast. Those found farther west are smaller, and the shell is thinner and less valuable. Tortoise-shells are exported to China, whence many of them find their way to Europe, on account of their low price. Pearls and mother-of-pearl oysters are fished along the north-eastern coast, but they are not so much esteemed as those of the Sooloo Islands.

The lac insect is found in the forests, but as its produce is inferior to that of Bengal and Birma it forms only an inconsiderable article of trade. Bees abound here, as all over Southern Asia, but only in a wild state. They make a little honey, and great quantities of wax, which is exported to China.

The mineral riches of Borneo are little known. Iron is found in the southern part. Copper has of late been discovered, and worked in Sambas, on the western coast. Silver seems only to occur united with gold; but antimony is plentiful at Sadang and Sararwah; gold, however, and diamonds constitute perhaps the most important branch of the commercial riches of this island.

The inhabitants of Borneo are either aborigines or foreign settlers. The former are divided into a great number of tribes. The Dayacks occupy the western and southern districts, the Biajoos and Itaen the peninsula extending to the north-east, and the Tiroon live on the western coast. In the interior are the Kayan, the Dusun, the Marut, the Tataeli, &c., but they are not farther known. It does not seem that any part of the interior is inhabited by tribes akin to the Australian aborigines. The foreign settlers are Malays, Javanese, Bugis, Macassars, Chinese, and a few Arabians.

All the inhabitants, with the exception of the two last named, belong to one race, which is called the Malay race. Their persons are short, squat, and robust. The medium height may be reckoned for the men about five feet two inches, and for the women four feet eleven inches, which is about four inches less than the average stature of Europeans. Their lower limbs are large and heavy, and their arms rather fleshy than muscular. The face is of a round form, the mouth wide, the chin somewhat square, the cheek-bones are prominent, and the cheek consequently rather hollow; the nose is short and small, never prominent, but never flat; the eyes are small, and always black; the complexion is generally brown, but varies a little in the different tribes, the Dayacks inhabiting the interior of the island being fairer than those of the coast; the hair is long, lank, harsh, and always black. The languages of the different aboriginal tribes differ widely from one another, and they have no literature, though some of the foreign settlers, as the Javanese and Bugis, have cultivated their languages, and have many books written in them.

The aboriginal tribes have not attained a high degree of civilization. Agriculture however seems generally diffused among them, as well as the most necessary arts of life. They cultivate chiefly rice, and collect gold-dust and diamonds. They trade also in rattans, dammar, and other products of their forests. Their dress consists only of a small wrapper round their loins. Their houses are wooden buildings, often large enough to contain upwards of 100 persons. In the construction of their boats and some of their utensils

they display considerable ingenuity. These tribes, though otherwise mild and simple, are cannibals, or at least some of them are. They kill their prisoners, and eat their flesh. Among other tribes the skulls of enemies are piled as trophies round their habitations, and in some a youth is not entitled to a wife until he has produced the head of a man. Some devour the heart of an enemy when they have killed him. Some who live on the coast have embraced the Mohammedan religion, but the greater part are idolaters. Polygamy is in general use among those who are able to maintain many wives and large families. One part of the Biajoes inhabits the north-western coast, but another leads a maritime life, and may be considered as sea-gipsies, or itinerant fishermen. They live in small covered boats, and shift to leeward from island to island with the variations of the monsoons. Their fishing-boats, in which they live with their whole families, are about five tons burthen, and their principal occupation is the catching of the sea-slugs, for which they frequently dive in seven or eight fathoms water.

The number of the Chinese settlers is considerable. In every part of the island some families are found near the mouths and on the banks of the rivers. They follow the occupations of merchants, mechanics, and labourers; cultivate the ground, distil arrack, make sugar, search for gold-dust, and trade to the interior as well as on the coast. They are not rich, being too fond of good living, and addicted to gambling, opium, and merry-making.

The Bugis, who come from the island of Celebes, are remarkable among the nations of Southern Asia for their industry and activity. They chiefly apply themselves to trade, to manufactures of Bugis cloth, and the working of raw silk into cloth. Many of them are possessed of property amounting to above 100,000 dollars. They are generally poor when they come from Bugisland, but they are extremely economical and even penurious in their manner of living. The daily expenses of a Bugisman's family, however great his property may be, does not amount to above three or four *wangs*; when the meanest Chinese labourer will contrive to spend a rupee, and a wang is only the twelfth part of a rupee. These Bugis are very active seamen, and visit all the islands and countries round Borneo. Their small vessels, or proas, generally cost from 150 to 300 dollars; and the whole outfit, as far as respects sails, cordage, provisions, stores, &c., for one of their voyages seldom exceeds the sum of forty or fifty dollars, while the value of the cargo is generally from 20,000 to 40,000 dollars. The crew receive no wages, but only a share of the adventure, according to certain regulations. Many of these proas are lost at sea; but few are taken by pirates, as the men defend themselves desperately and never surrender. More than a hundred come annually to the harbour of Singapore.

The Malays are the most numerous of the foreign settlers. They occupy nearly the whole coast, only a few tracts along it being still in possession of the Dayacks. Though rather indolent they are not deficient in military spirit, and have formed a great number of small states, and subjected the aborigines. But these petty sovereigns are not absolute, their power being limited by a state-council and a nobility.

The only European nation that has hitherto permanently settled on this island is the Dutch, who have got possession of about one third of the coast, and extended their dominion far inland in some places, so that the rich gold and diamond mines are in their possession. All the Dutch establishments are on the southern and western coast, and they govern the territories of the sovereigns of Banjarmassin, Succadana, Pontianak, Mampava, Sambas, and Matan, and of some others farther inland. This great tract of country is governed by three residences, established at Banjarmassin, Pontianak, and Sambas, with two subordinate residences at Mampava and Landak.

In the territories possessed by the Dutch there are two places of considerable trade, Banjarmassin and Pontianak. Gold is found at six different places, at Ombak, Sanga, Larak, Banjar-lant, Sambas, Pontianak, and Montradak, but especially at the two latter places. The metal is found in alluvial deposits, which are channelled by the beds of numerous rivers, and the situation of the gold is generally very superficial, not usually above five or six feet from the surface. Forty feet is the common width for the stratum which contains it. The ore is in general very rich, containing in a hundred parts, rarely more than fourteen, and frequently only three parts of dross, but a small

quantity of silver is always combined with it. According to the calculation of Crawford the annual produce of the mines of Borneo is 88,362 ounces: Eschwege, in his 'Pluto Brasiliensis,' states that of the mines of Brazil as not exceeding 8000 marks, or 64,000 ounces.

The diamonds are found in the territories of the princes of Banjarmassin and Pontianak. The principal mines are at a place called Landak, whence the diamonds of Borneo are called Landak diamonds. These precious stones are not found here, as in Brazil, in the rivers, but they are dug by means of perpendicular and lateral shafts. The mines are only wrought by the Dayacks, but those of gold are mostly worked by the Chinese. The Bugis resident merchants are the great dealers in diamonds. In this island there is one of the largest diamonds in the world; it is either in the hands of the Prince of Matan, or in the possession of the Prince of Pontianak. It weighs 367 carats, and its real value, according to Crawford, is 269,378*l.* which is 34,822*l.* less than that of the Russian diamond, and 119,773*l.* 10*s.* more than that of the Pitt diamond.

To the north-east of the territories of the princes dependant on the Dutch, and along the north-western coast, extends the kingdom of Borneo Proper. It is not well known at what point on the coast its south-western boundary lies, but towards the north-east it extends to the mouth of the river Kimanis, which is traversed by the 11th parallel. It consequently contains a sea-coast of between 600 or 700 miles, and is said to extend from 100 to 150 miles towards the interior of the island. But no part of Borneo is less known; the approach to the coast is very dangerous for vessels of considerable burden, and it is rarely visited by Europeans. Still the intercourse between Borneo Proper and Singapore is greater than with any other part of the island, but it is entirely carried on by Bugis merchants and Bugis navigators. The capital is Borneo. From Sadang, towards its western frontier, great quantities of antimony are brought to Singapore. The mountain which contains the antimony is about one day's journey from the coast. The sultan, as well as a considerable portion of the population, are Malays.

The north-eastern part of the island is under the sultan of the Sooloo Islands: it extends from the river Kimanis on the north-western coast as far as Cape Konneeogan, which forms the northern entrance of the Straits of Macassar. This part also is rarely visited and little known. The inhabitants, the Tiroons, are notorious pirates, like the Sooloo islanders, and they cruise especially in the seas of Mindoro and Celebes, and among the Philippines. Their country produces immense quantities of sago, which is sold to the Chinese, who seem to have the whole commerce of this coast in their hands. There is no important trading place on this coast. At the Island of Balambangan, opposite Cape Sampanmangia, the English had formerly a settlement, but it was soon abandoned.

The coast extending from Cape Konneeogan to Cape Salatam seems to be divided among a great number of petty sovereigns, and here the aboriginal tribes are still in possession of the sea-shores. Its commerce however is chiefly carried on by the Bugis, who have settled on different places along the coast, but especially at Passir, a town of some note, which is sometimes visited by European vessels.

The commercial intercourse of Borneo with China is much more extensive than with Europe, which is partly to be attributed to the great number of the Chinese who have settled on the island, and still more to the circumstance of many of its productions being either entirely unfit for European markets, or too high-priced. To the first class belong the edible swallow-nests, the sea-slugs, and the aquila woods; to the second the camphor. The Chinese ports with which this commerce is most active are Canton, Amoy, Ningpo and Shanghae. It is remarkable, that the Chinese junks, though unarmed, pass unmolested through these seas, where European vessels are in continual danger of being attacked by the numerous pirates.

Among the European nations, the Dutch, who exercise authority over one-third of the coast, carry on a most active commerce, exporting pepper, gold, and other products. But the commercial intercourse with Singapore is far from being inconsiderable, as upwards of forty vessels annually go there from the kingdom of Borneo Proper.

(Dr. Leyden's *Description of Borneo in the Asiatic Journ.*; Crawford's *History of the Indian Archipelago*; *Asiatic Journal*; Stavorus's *Voyages*).

BORNEO, the capital of the kingdom of Borneo Proper, or Brunai, is situated on the north-western coast of the Island of Borneo, 4° 56' N. lat. and 114° 44' E. long., on the banks of a river, about ten miles from the sea. The mouth of the river is narrow, with a bar in front of it, on which there are scarcely 17 feet of water at high tides. Farther up the river has a considerable depth, on an average six fathoms, and here the shipping lies, particularly the Chinese junks, which are moored head and stern. The town, which is on low ground on both sides of the river, contains a considerable number of houses, built on posts four or five feet high, which, at the rise of the tides, allow the water freely to pass under them. The streets are formed by canals, either natural or artificial, which facilitate communication, and they are always covered with boats, which are managed by women with great dexterity.

Borneo is a place of considerable trade. Its commerce was principally limited to its intercourse with China, the Philippines, and the Sooloo Islands, the countries on the peninsula of Malacca not being much frequented by the Borneo navigators. But since the foundation of Singapore, the Bugis merchants of Borneo often visit that port. The exports are rice, black pepper, camphor, cinnamon, bees-wax, sea-slugs, turtle-shell, pearls, and mother-of-pearl, with tea, wrought and raw silk, and nankeen, the three last articles being imported from China. At Singapore they take in exchange cottons and woollens, opium, iron, arms, and ammunition. This port is rarely visited by European vessels, but many Chinese junks come from Amoy and Ningpo. The Chinese find it advantageous to build their junks here, for though the island has no teak, it produces other kinds of good ship-timber, among which is the camphor-tree. (Dr. Leyden's description of Borneo in the *Asiatic Journal*.)

BORNHEM, a town and commune in the province of Antwerp, about 12 m. W. from Mechlin, and 10 m. S.W. of Antwerp. The commune is bounded on the N. and the W. by the Scheldt, which separates it from East Flanders. The town contains 594 houses and 4043 inhabitants, among whom, in 1829, occurred 121 births, 104 deaths, and 27 marriages. Bornhem supports a communal school, in which 203 boys and 103 girls were taught in 1833.

The principal trade of the place is in corn, flax, and linen cloth, considerable quantities of which are made there. In cutting a sluice, in 1781, a great number of Roman bronze medals were found, thirty feet below the surface, and seven or eight feet below the level of the Scheldt. These medals were of the emperors Commodus and Caracalla.

The river Rupel having, in February, 1825, forced down the dyke of the polder of Eykenbroek, a great part of the commune of Bornhem was overflowed, so that nearly all the inhabitants were obliged to abandon their houses, and were unable to return to them for two months. (*Dict. Géog. de la Prov. d'Anvers*, par Van der Maelen.)

BORNHOLM, an island and bailiwick attached to the Danish province of Seeland, is situated in the Baltic, 90 m. E. of the island of Seeland, about 40 m. E. by S. of Ystad on the coast of Sweden, and about 50 from the N.E. shores of the Prussian island of Rügen. It is about 32 m. in length from N. to S., and varies from 9 to 12 in breadth, except at the N. extremity; inclusive of three islets, it contains an area of about 216 sq. m. Bornholm presents features the very reverse of those which characterise the other Danish islands, for it is not only a complete rock, but mountainous in the interior, particularly towards the N.; and it is so walled in by precipitous cliffs and dangerous reefs that, at certain seasons of the year, the approach to it is extremely hazardous. The whole channel between the island and the coast of Pomerania is dangerous to vessels that draw much water, arising mainly from the shifting sand-bank called the 'Dueodde' or Pigeon's Point. A high range which stretches across Bornholm from N. to S., called the 'Almindingen', contains the 'Ryterknecht,' or Knight's follower, the most elevated point in the island, about 500 ft. in height. The Almindingen does not form a continuous elevation, but is intersected by fertile valleys lined with underwoods of oak. There is also a spacious moor, the Lyngmark, in the interior, on which nothing will grow but low juniper and other wild shrubs, with some coarse grass; the inhabitants however use it as common pasture ground. The remainder of the island has a stony soil, partially intermingled with tracts of deep loam, and on three

spots with drifting sand. Bornholm is watered by a number of rivulets, possesses some excellent springs, and has several sheets of water. Every spot is diligently cultivated. The climate is colder but drier than that of the adjacent islands, and it is accounted very healthy. The agricultural produce of the island is principally oats, rye, barley, pease, and some small quantities of flax, hemp, hops, and potatoes. The cattle are small but of good quality, and the wool is of a finer and better description than that from the neighbouring islands; the stock in hand is estimated at 9000 horses, 20,000 oxen and cows, and 25,000 sheep. Bees are every where reared; poultry, particularly ducks and geese, is abundant, and marine fowl are plentiful, but game is scanty. The coast abounds with fish, mostly salmon, haddocks, and small-sized herrings. Bornholm is rich in mineral productions; coal is partially raised for domestic use; quarries of sandstone and millstones are worked; and there is also marble, slate, and potter's-earth.

The inhabitants of Bornholm, about 20,000 in number (in 1801 18,902), are wholly of Danish extraction; they are a remarkably industrious race, quick in temperament, enterprising, and sober, and make good sailors, though rough and somewhat perverse. They speak a peculiar dialect of the Danish mixed with German words; and are expert in the manufacture of woollens, pottery, and clocks and watches, the last mentioned being made in the town. General comfort prevails throughout Bornholm; the farmers are the owners of the lands they cultivate. It is the custom of the island for the lands to descend to the youngest son, but, on the failure of male issue, the eldest daughter, not the youngest, inherits them. Among other privileges which the Bornholmers enjoy are those of paying only half the taxes imposed on their fellow subjects, and providing for the defence of the island out of their own resources. The military force, which is confined to natives, and cannot be removed out of the island, is composed of two companies of artillery, four squadrons of dragoons, four companies of regular infantry, a company of riflemen, and eleven companies of civic and provincial militia.

Bornholm is divided into four districts or 'hardes,' the northern, western, southern, and eastern, and contains twenty-one parishes, five towns, two hamlets, and 948 farming establishments; the last stand wholly isolated, nor are there any regular villages throughout the island. Though there is but one public school, most of the inhabitants are able to read and write.

In very remote ages Bornholm belonged to Denmark, but in the sixteenth century it was made over to the citizens of Lübeck for fifty years. In 1645 it was captured by the Swedes, who retained possession of it by the subsequent treaty of Roeskild; in 1658 however the inhabitants rose against their new masters, under the conduct of JENS KORFOED, and having declared their island an heir-loom of the crown of Denmark, it has ever since maintained its allegiance to it.

The chief town of Bornholm lies on a high flat on the W. coast, and is called Rønne, Rønnedy, or Rottum. It is an open place, irregularly built, and has a singular appearance in consequence of the walls of the houses being whitewashed, and the woodwork being smeared with tar. The castle, now reduced to an old tower, is all that is left of the fortifications raised in the times of Christian V.; they have been superseded by batteries of modern construction. There are a large market-place in the town, a church, grammar-school, town hall, arsenal, and hospital, several streets, nearly 600 houses, and about 2800 inhabitants, who subsist by traffic in grain, making clocks and watches and pottery-ware, and upon the produce of their fisheries, their trade with the interior and foreign parts, and their navigation. The harbour is small, and varies in depth from 5 to 9 ft. the first mentioned being the more general depth; but it affords a safe anchorage against most winds. It is the seat of government, and the residence of the bailiff or Amtman, and of the military commandant, 56° 6' N. lat., and 14° 40' E. long. The next town of importance is Nexø, on the S.E. coast; it is situated upon an elevated mass of rocks, possesses a good harbour and a church, a school, a hospital, and a public house. The pop. is about 1700. In the vicinity are quarries of sandstone and millstones, worked by the government. The other towns are Askø, on the N. coast, the interior, which is the seat of justice for the island, and

a handsome black marble church, the finest in Bornholm, a hospital and public store, and about 460 inhabitants; Hasle, on the W. coast, with an indifferent harbour and about 500 inhab. Svanike, on the eastern coast, lying in a small bight which forms an insignificant harbour with bad anchorage, has a church, hospital, charity-school, and store-house, and about 670 inhab.; and Sandvig, on the N.E. point of the island, a town which does not contain more than 50 houses, and about 200 inhab. Maltgværn is said to contain 1400 pop. The three small islands or rocks of Christiansøe, Fredericks-holm, and Gråsholmen, are about 17 m. E. of the N. point of Bornholm, and belong to the larger island. Christiansøe and Fredericks-holm are inhabited and fortified, and on Christiansøe there is a lighthouse. The fisheries and the taking of sea-fowl are very productive. The pop., including the garrison, is about 500.

BORNOU, a kingdom situated nearly in the centre of North Africa, between the 10th and 15th parallels of N. lat., and from 12° to 18° E. long. It borders on the N. on the eastern portion of the great desert of Sahara, and partly also on the kingdom of Kanem, which extends on the N. banks of the lake Tchad. This lake forms its E. boundary to the mouth of the Shary, and hence it runs along the course of this river, probably up to the place where it issues from the mountains of Mandara. The latter kingdom, which comprehends the northern declivity of an extensive range of primitive mountains, extends to the S. of Bornou, and on the W. lies the Felatah kingdom of Howssa.

The whole country presents nearly a perfect level, with a few very gentle ascents and descents. The level is so little above the neighbouring lake of Tchad, that in the rainy season great tracts of land along its banks are inundated, when both the inhabitants of the villages and the woods are compelled to retreat farther to the west. But even the remainder of the country is partially subject to inundations, the slow rivers and rivulets which intersect the country being unable to carry off the immense supply of water during the rainy season; and thus extensive tracts which skirt their banks on both sides are covered with water, and remain inundated generally for three months.

It does not appear that Bornou extends to the lower ranges of the Mandara Mountains, though these mountains are visible in the southern districts of the kingdom. The rivers are numerous, but have generally a short course, falling either into the Tchad, or into one of the two principal rivers, the Shary and the Yeou. The Shary has its source in the Mandara Mountains, and seems to form the boundary between Bornou and Begharmi, nearly the whole length of its course in the plains. Towards its mouth it divides into many branches, and forms numerous islands; those which lie nearest to the mouths of these branches are complete swamps, and unfit for agriculture even during the dry season. The Yeou river rises in the more hilly country of Howssa, near 10° E. long., where it is called Shoohun, and after having traversed in the first half of its course a country mostly covered with low rocky hills, it runs for the remainder of its course, which in general is in an eastern direction, through the extensive plain of Bornou to the Tchad. This lake covers many thousand square miles, and contains many inhabited islands. It extends from N.W. to S.E. about 200 m., but it has not yet been ascertained how far it extends to the N.E. It abounds in fish.

The heat in Bornou is very great, but not uniform. The hottest season is from March to May, when there is no rain, and the thermometer sometimes rises to 105° and 107° at two o'clock in the afternoon. The prevailing winds of this season are from S. and S.E., and they are suffocating and scorching. In night the thermometer sometimes falls to 86° and 88°. This hot season is followed by violent thunder, lightning, and rain towards the middle of May, when the inhabitants prepare the ground for their corn. At the end of June the inundations of the rivers and lakes begin. The rains are then nearly continual, and the weather cloudy, damp, and sultry. The winds are hot and violent at the same time, and blow commonly from the E. and S. In October the rains become less frequent, the air is milder and more fresh, and the weather serene; breezes blow from the N.W., with a clearer atmosphere. Towards the end of December and in the beginning of January it begins to be cold, and in these months Bornou is colder than might be expected from its latitude. The thermometer never rises above 74° or 75°, and in the morning it descends to 58° and

60°. The prevailing winds in this season blow from the N. & N.W.

The only implement of agriculture is an ill shaped hoe, made from the iron found in the Mandara Mountains. All the labours of the field devolve almost entirely on women. The most valuable products are maize, cotton, and indigo, of which the two last grow wild close to the Tchad and in the overflowed grounds. The indigo is of a superior quality, and the dark-blue colour of their robes, or large shirts (the only dress the people wear), is probably not excelled in any part of the world. The senna plant is also found wild. Rice is not much cultivated, and what is raised is of inferior quality; considerable quantities are imported from Soudan. Very little wheat is grown, and barley is not abundant. The grain most used as food for men and animals is a species of millet called *gussub*, which is raised in great quantities, and prepared as food in different ways. The seed of a grass called *kashaia*, which grows wild in swampy places, is made into flour, or eaten like rice, when boiled. Bornou is almost entirely destitute of fruit-trees. Mangoes are only found in the southern districts near Mandara, and date-trees only to the N. of Woodie, four days N. of Kouka, and even there they are sickly, and produce an indifferent fruit.

The wealth of the inhabitants principally consists of slaves and domestic animals, especially bullocks and horses. Black cattle are most numerous. The Shouaas on the banks of the Tchad have probably more than 20,000 heads, and those on the river Shary not less. They breed also many horses, and send to Soudan annually from 2000 to 3000, where they fetch a good price, the horses of that country being very inferior. The other domestic animals are dogs, sheep, and goats. The common fowl is small but well flavoured, and reared in immense numbers. Bees and locusts are numerous; the latter are eaten by the natives with avidity, both roasted and boiled, and formed into balls as a paste. The beasts of burden are the bullock and the ass. There is a very fine breed of asses in the Mandara valleys. Camels are only used by foreigners or persons of rank.

The lion, the panther, a species of tiger-cat, the leopard, the hyæna, the jackal, the civet cat, the fox, and several species of monkeys, black, grey, and brown, are found in Bornou. The elephant is so numerous near the Tchad that herds of from fifty to two hundred are sometimes seen; they are hunted for the ivory as well as for their flesh. Other wild animals whose flesh is eaten are the buffalo, the crocodile, and the hippopotamus. The flesh of the crocodile is extremely fine, it has a green firm fat, resembling the turtle; and the calipee has the colour, firmness, and flavour of the finest veal. (Denham.) The giraffe is found in the woods and marshy grounds near the Tchad; there are also antelopes, gazelles, hares, and an animal of the size of a red deer, with annulated horns, called *koorigum*.

Partridges are abundant and large, but the grouse are of a small kind. Besides these birds many others abound, as wild ducks, geese, snipes, and ostriches, which latter are as much killed for their flesh as their feathers. In the marshy grounds are great numbers of pelicans, spoon-bills, and Balearic cranes, with a variety of other large birds of the crane species. Guinea-fowl abound in the woods.

Reptiles, especially scorpions, centipedes, large toads, and serpents of several kinds, are very common. A snake of the congo kind measures sometimes from fourteen to sixteen feet in length, but is said to be harmless.

Iron is found in the Mandara Mountains, and imported into Bornou, but in no great quantity. The best comes from Soudan, mostly worked up into good pots and kettles.

The inhabitants speak ten different languages, or rather dialects of the same language. The Shouaas inhabiting the borders of the lake Tchad are Beduins, and have preserved the Arabic, which they speak nearly pure. They are the best troops of Bornou, and it is said that this country can muster 15,000 Shouaas. The aborigines of Bornou, who call themselves Kanowry, have large unmeaning faces, with flat Negro noses and mouths of great dimensions, with good teeth and large foreheads. Their dress consists of one, two, or three robes, according to the means of the bearer. Persons of rank wear a cap of dark-blue, but common people go bare-headed, and take care to keep the head constantly free from hair. They are Mohammedans, and very strict about the external rites of praying and bathing. They are less tolerant than the Arabs. They tattoo their bodies like the other negro nations of these latitudes.

The principal towns or cities are thirteen among which

the most important are Kouka, Angornou, the residence of the sheikh, and Birnie, the residence of the sultan.

The government is an absolute monarchy; but the sultan has lost all his authority, having been formerly compelled by the Felatahs to abdicate the throne. When these enemies were vanquished by the sheikh, he replaced the antient royal family on the throne, but kept all the power himself. His soldiers are well disciplined and armed, and he can if necessary collect an army of 20,000 men.

The commerce of this country is not great. But as a great portion of Soudan has no commercial intercourse with any part of the world except by the road traversing Bornou, and proceeding hence through Bilma and Mourzuk to Tripoli, a considerable barter takes place in this country between the merchants of Soudan and the Moors of Northern Africa. The Moors bring different sorts of cotton and silk, a few woollen cloths, and various utensils of metal: they receive in exchange only slaves, though the country could offer ostrich skins, elephants' teeth, and raw hides. The retail commerce is carried on by means of a peculiar kind of coin. Strips of cotton, about three inches wide and a yard in length, are called gubbuck, and used as small coin; three, four, or five of these, according to their texture, go to a rottala, and ten rottala are equal to a dollar. (Denham.)

BORODI'NO, a village in the Russian province of Moscow, is situated on the Kolotsha, within a short distance from the banks of the Moskwa, about 70 m. W. of the city of Moscow. The desperate battle between the French and Russian armies, which was fought here on the 5th September, 1812, preceded the sanguinary conflict at Moshaisk, which took place two days afterwards, and opened the gates of the antient metropolis of Russia to the French. In 55° 25' N. lat., and 35° 40' E. long.

BOROVSK, the capital of a circle of the same name in the Russian province of Kaluga, lies on the Prorra, 891 versts (about 594 m.) S.E. of St. Petersburg, and about 50 m. N.E. of Kaluga. It is an old town, contains 3 stone and 7 wooden churches, 2 asylums for the indigent, several public buildings, about 730 houses, of which not more than 6 are of stone, 123 stores, or rather substantial booths of wood, and a pop. of about 6000, to which number they have increased since 1783, when they amounted to 5176. A variety of manufactures are carried on in the town; and among them 5 of sail-cloth, some of which employ from 200 to 250 weavers and more, 5 works for melting down tallow, and 4 tanneries. Borovsk carries on a brisk trade with the interior and the ports of Russia, in the various products of the adjacent country, sail-cloth, hemp, flax, leather, tallow, &c., and has a large annual fair. The environs raise large quantities of vegetables and fruit, particularly garlic and onions, of which there is a considerable export for the Petersburg market. It was formerly an spangane of the post-humous sons of the princes of the reigning families at Moscow, and is celebrated in the Russian annals for the gallant defence made against the forces of the second 'false Dimitry' by Prince Michael Volkousky, in 1610. Being expelled from every part of the town by his assailants, he carried on the brave but fruitless contest in the convent of St. Paphnutius, about 2 m. out of the place, and ultimately fell, covered with wounds, near the nave of the chapel. There is an iron-mine in the neighbourhood, which is now closed. It lies in 55° 14' N. lat., and 36° 10' E. long., according to Hassel.

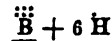
BORON. Minerals containing boron or any of its compounds as an essential component part are comparatively few in number, and only found in a few spots; it may be therefore considered as one of the least predominating of the elements. It is the basis of sassoline, or native boracic acid; borax, or borate of soda; boracite, or borate of magnesia; datholite, or borate and silicate of lime; and botryolite.

It also enters as boracic acid into the composition of axinite and tourmaline, but only in small quantity, most analyses giving between two and three per cent. of the acid in the former, and between four and five per cent. in the latter mineral.

The presence of boron in any mineral may be readily detected with the blow-pipe, owing to the beautiful green tint communicated to the flame by the boracic acid. The facility with which the tint is obtained depends on the element with which the boracic acid is combined; in every instance however it may be detected by the following process:—let a flux, composed of 4½ parts of bisulphate of

potash and one of finely-powdered fluorspar, be well mixed with about an equal quantity of the assay, which must then be formed into a paste by the addition of a little moisture. A small quantity of this being taken up on the extremity of a platinum wire must first be dried and then exposed to a high temperature until it is fused, being held within but near the extremity of the blue flame. When the mass is fused it appears for a few moments enveloped in a pure green flame, which soon disappears, and cannot be again produced. The theory of the changes is this:—the fluorspar of the flux being set free by the excess of sulphuric acid unites with the boron of the assay, forming the fluoboracic acid, which at the moment of its volatilization communicates the green tint to the flame. This process is however only necessary for the detection of the boracic acid in axinite and tourmaline, as the flame is permanently coloured by sassolino, boracite, datholite, and botryolite, and the same effect is produced by moistening the glass of boron with sulphuric acid and again fusing it.

The native boracic acid is found as a deposit in several of the lagunes of Tuscany, and in considerable abundance from the hot springs near Sasso in the same country, whence it has been called sassoline. It occurs in the form of thin scaly particles, or crystalline grains either loose or aggregated in the form of a crust. These crystalline grains are hydrated boracic acid, the constitution of which may be expressed by the formula—

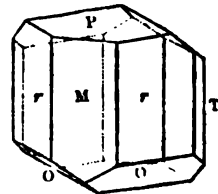


as given by Berzelius, 100 parts of sassoline being composed of boracic acid, 56.37, water, 43.63: their specific gravity is 1.48. The lustre is pearly, and the colour is greyish or yellowish white: they are slightly translucent.

It loses its water of crystallization and fuses at a very low temperature, forming a glassy globule, which is a non-conductor of electricity, and becomes resinously electric on friction. It has also been found more recently by Dr. H. Land to be a deposit of the solfatara within the crater of Volcano, one of the Lipari Isles, being an exhalation of the fumaroles, around the edges of which it forms thin filament or cakes on the surface of the sulphur.

Borax, or borate of soda, is principally employed (as stated under **BORACIC ACID**) in the arts as a flux in several metallurgical processes, and is very advantageously used in the process of soldering metals. To the chemist it is an invaluable re-agent in experimenting with the blow-pipe.

Borax is soluble in twelve times its weight of cold and twice its weight of boiling water, from which it may be readily obtained in very perfect crystals of the oblique prismatic system. The more usual form of these is represented in the accompanying figure, where the faces *r* are the vertical prism, the angles of which are, according to the measurements of Phillips, 86° 30' and 93° 30', the acute edge of which is truncated by *M*, the obtuser by *T*, while *P* is the inclined terminal plane, and makes with *M* an angle of 106° 30'; *O* are the faces of a hemi-octahedron.



The following are the measurements given by Phillips.

<i>r</i> on <i>r</i>	86° 30'
<i>P</i> on <i>r</i>	101° 30'
<i>M</i> on <i>r</i>	133° 20'
<i>P</i> on <i>M</i>	106° 30'
<i>P</i> on <i>O</i>	139° 15'
<i>O</i> on <i>O</i>	122° 34'

It is very common to find the edges between *O* and *r* truncated. The specific gravity varies from 1.5 to 1.7; hardness from 2 to 2.5. When coloured it is of a beautiful yellowish-green: the fracture is conchoidal and of a resinous lustre.

Its chemical composition is expressed by Berzelius by the formula $\overset{\cdot\cdot}{\text{N}} \text{a} \overset{\cdot\cdot}{\text{B}} + 10 \text{H}$, corresponding to the analysis—

Boracic acid	36°52
Soda	16°37
Water	47°11

Boracite is in many respects one of the most interesting bodies of the inorganic kingdom. It was first described by Lavius in 1787 under the name of cubic quartz, and was found in the Gyps rocks near Lüneburg in Brunswick, where it occurs in small crystals, which are perfectly developed on every side and imbedded in the gyps. The crystals usually present a combination of the cube, dodecahedron, and the two hemi-octohedrons, in which combinations sometimes the one sometimes the other form predominates. The locality was for some time the only spot where boracite was found, until they were discovered in a gyps rock called Segeberg in Holstein, at the foot of which is situated a small village of the same name. The boracite of this spot possess the same characters as those of Lüneburg, and add considerable interest to the very peculiar rock in which they are found, which is itself a very remarkable object from its abrupt elevation over the sandy plain of Holstein. It is described in the 'Geognostischen Aufsätzen' of Steffens, who considers it to be of the same formation as the Gyps of the Paris basin.

Boracite has been analysed by Stromeyer, who found it composed of boracic acid 67, magnesia 33.

Berzelius expresses its atomic constitution by the formula



but this differs from the proportions of the analyses, which it must also be stated vary considerably from each other.

The specific gravity is 2·9; it is transparent, but also frequently opaque; the hardness is 6·5 to 7; it is brittle and has a conchoidal fracture; its lustre is vitreous, inclining to adamantine.

The colour is usually a yellowish or greenish grey; it fuses easily before the blowpipe, at first with much foam, and then forms a glass globule, which crystallizes on cooling, so that the surface is covered with fine acicular points. When just so much soda is added as will form with it a clear glass, it will then crystallize as perfectly as the phosphate of lead.

The most remarkable properties of boracite are its optical and electrical characters. Though belonging to the regular system of crystallography, it nevertheless, according to the experiments of Brewster, refracts light doubly and in a similar manner to crystals of the rhombohedron system, the axis of refraction being coincident with an axis joining the opposite angles of the cube. These four axes were also found by Häuy to possess the remarkable property of becoming electric when the crystal was heated, the vitreous electricity being accumulated on one extremity of each axis and the resinous on the other.

BORON, an elementary body, and one of the constituents of boracic acid, oxygen being the other. This substance was first obtained by Davy in 1807, and he procured it by exposing slightly moistened boracic acid to the action of a Voltaic battery, placed between two surfaces of platinum; a dark coloured substance separated on the negative plate, to which he gave first the name of *boracium*, supposing it would be found to be metallic; but having afterwards ascertained it to be more analogous to carbon than to any other substance, he called it *boron*. In this way however little boron was obtained, and its properties were imperfectly examined till 1808, when Gay Lussac and Thenard procured it in larger quantity by heating boracic acid with potassium in a copper tube; by this metal the oxygen was separated from the boron, potash was formed, and boron developed; and the residue of the operation being washed first with water, and then with dilute muriatic acid, the boron remains. According to Berzelius, boron is more economically obtained by decomposing an alkaline fluoborate by potassium; for this purpose liquid fluoric acid is to be saturated with boracic acid, and into this solution one of fluoride of potassium is to be gradually dropped until no further precipitate is formed: the salt obtained is to be well washed, and dried at nearly a red heat; then mix it well with an equal weight of potassium, and stir the mixture with an iron rod, and heat the tube till it is nearly red hot, and the residual mass will be found to consist of boron mixed with fluoride of potassium; the fluoride is dissolved by water and the boron left. If however it be washed with pure water a quantity of it is dissolved, and therefore towards the end of the washing it

is better to employ a weak solution of muriate of ammonia and lastly only alcohol.

Boron is a powder of a deep brown colour with a shade of green, and when it has been heated *in vacuo* or in gases which contain no oxygen, it is insoluble in water; and is not dissolved by alcohol, æther, or oils, whether hot or cold. It is devoid of smell and taste. It is not altered by exposure to the air or to oxygen gas at the usual temperatures; but when heated to about 600° it absorbs oxygen, and burning with considerable brilliancy it is converted into boracic acid; a portion however of the boron is so enveloped by the acid formed, that it is impossible to burn the whole of a given quantity of boron at one operation.

The density of boron when recently prepared is 1·183, but when it has been exposed to a strong heat in close vessels its density is increased to 1·844, and it suffers no other change, being neither fused nor volatilized. It is a non-conductor of electricity; the alkalis and acids produce no effect upon it, except the nitric which it decomposes, and is by acquiring oxygen converted into boracic acid.

Boron combines with various elementary bodies, forming with the metals compounds which are termed *borurets*.

Hydrogen and Boron. It appears that, under peculiar circumstances, hydrogen is capable of dissolving a small portion of boron; but no definite compound to which the term of boruret of hydrogen could be applied is known.

Oxygen and Boron unite, and only in one proportion; the compound is described under BORACIC ACID.

Boron and Sulphur form sulphuret of boron. [SULPHUR.]

Boron and Fluorine combined. [FLUOBORIC ACID.]

Boron and metals. (See the various metals.)

BOROUGHS OF ENGLAND AND WALES. The term *borough*, in familiar language, seems to have been, in latter times, rather vaguely used. The long agitation of the great question of parliamentary reform, and the absorbing interest of the recent struggle to obtain that great constitutional amelioration, made this term synonymous, in the popular apprehension, with a *town sending one or more representatives to the Commons' House*. But the still more recent discussions on the bill for the reform of municipal corporations have turned the public attention to that characteristic of a borough in which its existence originally and essentially resides—its organization for local government forming the natural and necessary basis of its political character and efficiency.

The vital importance to the welfare and security of a civilized society, of the general establishment of a wisely-regulated municipal organization, is becoming daily more and more understood; and the part of this subject which is of primary importance is manifestly that which relates to the local government of considerable towns. To enable the reader distinctly to appreciate the general change now operating in the town-constitutions of England and Wales, it is indispensable that we should first take a full though compendious view of their general history and previous state.

The word *borough* is itself a monument, older than all written records, of the state of society in which, in these islands, the institution originated. The Anglo-Saxon *byrig*, *byrg*, *burh*, &c. (for the word is written in a great variety of ways), like the German *burg* of the present day, was the generic term for any place, large or small, fortified by walls or mounds. The fortifications of the continental Saxons, before their inroads on the Roman empire, it is well known, were mere earth-works: in their half-nomadic state, they had neither means nor motive for constructing any other. But their conquest and colonization of the greater part of Roman Britain put them in possession of a more solid and artificial class of fortifications, of which, when the first fury of their devastating violence against everything Roman had exhausted itself, they must in some degree have appreciated the utility. The new circumstances in which the Saxons found themselves—in possession of regularly-cultivated fields, of towns, of ports—must of necessity have led to a change in the *forms* of their civil institutions, though the fact of their constituting the great majority of the population in the districts in which they settled, enabled them to keep inviolate the republican *spirit* of those institutions embodied in the practice of election.

The municipal organization of the Anglo-Saxons was not confined to their towns; it pervaded the whole territory; the modern distinction between personal and political freedom was unknown; the right to a weapon for

his personal defence and a vote in the affairs of his town or district were regarded as inalienably attached to every freeman. This leading principle of the Anglo-Saxon polity, directly descended from those continental Germans whose free spirit Tacitus has so clearly and forcibly exhibited, must be borne in mind, in order to estimate the relative position of the Anglo-Saxon boroughs. They were not, like the boroughs of modern times, isolated municipalities in the midst of large tracts of country subject, in matters of local judicature and taxation, to magistrates directly nominated by the central authority of the state; they were only parts of one great municipal system, extending over the whole territory. The principal boroughs existing at the period of the Norman conquest were the towns still girt by the walls and towers erected under the Roman regime. The state of the age, the prevalence of warfare both on the large and the petty scale, the constant liability to foreign incursion, made walls and trenches necessary to the security not only of trading towns, but of isolated mansions; and *byrig, byrg, or borough* as it is now written, was still the generic term for all. But the boroughs by distinction, the boroughs in political estimation, were those towns (apparently all the considerable ones) which had each, under the name usually of *burgh-reve* or *port-reve*, an elective municipal officer exercising functions analogous to those of the elective-reve of the shire or *shire-reve*.

The deluge of the Norman invasion, and the immediate interest which the conquerors had in effacing, as far as in their power, all traces of the political system which they were subverting, have rendered it difficult to trace the precise mode in which the local legislatures, the borough and the shire assemblies, operated on the composition or the acts of the general legislature; but of the local organization enough is discoverable to show most clearly that it had never been moulded by a central authority, but, on the contrary, that the central authority had been, as it were, built up on the broad basis of a free municipal organization. The Anglo-Saxon kingdom, in short, made up of the various free states of the heptarchy, was, in its constitutional spirit and maxims (which in no country depend exclusively on the state of its general civilization), much more like a federative republic under a president for life, than like any monarchy of modern Europe.

For a clear exposition of the necessarily republican basis of all the public institutions of the Anglo-Saxons, up to their kingship itself,—which, though now becoming generally understood, it is necessary to insist upon again and again, in opposition to the mis-statements on the subject, which are even yet being propagated,—we would refer to Mr. Allen's learned and sagacious 'Inquiry into the Rise and Growth of the Royal Prerogative in England,' 8vo., 1830. The indiscriminating use, by our historians, of the words *king* and *kingdom*, as if bearing precisely the same import after the Norman conquest as before it, has contributed not a little to the confused apprehension of the matter which has generally prevailed. The very etymology of the Saxon compounds *cyn-ing* and *cyne-dom* (according to modern orthography *kin-ing* and *kin-dom*) denotes an elective national head. The *cyne* or *kin* of the Saxons was synonymous with *nation* or *people*; and *cyn-ing* or *kin-ing* (by contraction, *king*) implied, as Mr. Allen well remarks, that the individual so designated, was, in his public capacity, not, as some modern sovereigns have been willing to be entitled, the *father* of the people, but their *offspring*. In the introduction and use of the modern word *kingdom*, we trace a still more remarkable perversion. The Anglo-Saxon *cyne-dom* or *kin-dom* denoted the extent of territory occupied and possessed by the *kin* or nation—an import diametrically differing from that of *kingdom*, which, in the decline of the Norman tongue as the language of the government implanted by the conquest, was substituted for the Norman *royaulme* (in modern English, *realm*)—as the word *king* itself, with as little regard to its etymological derivation, was substituted for the Norman *roy*. Thus it is manifest that the difference of meaning between *kin-dom* and *king-dom* is as wide as that between the principle which recognized the nation at large as the original proprietor of the soil, and that which vests such absolute proprietorship exclusively in the crown—a distinction which it is most important to perceive and to bear in mind.

It is not possible to form any just conception of the political history of the English municipal towns, without first possessing a more correct notion than is to be gathered from

the greater part of our modern historians, of the real character of the great revolution effected in England by a foreign conqueror towards the close of the eleventh century. Want of diligence or of candour has betrayed them into giving always a faint and often a false representation of that transaction. A sagacious and eloquent continental writer (Thierry) has lately, indeed, thrown a strong and true light on its real nature; but for the general English reader the history of that great revolution has yet to be written. No thing can be more fallacious than the idea that it was nothing more, or little more, than a change of dynasty, resulting from a mere personal contest between two pretenders to an hereditary crown. The kingship of the Anglo-Saxons was not hereditary; nor had they any such thing as an hereditary office, municipal or political, legislative, executive, or judicial. It is the want of carefully distinguishing in their own minds the constitutional maxims respecting English royalty established at the present day from those held and acted upon by our Anglo-Saxon ancestors, that has misled so many writers in treating of the latter period. It has recently betrayed both Mr. Turner and Mr. Palgrave, much praise as may be due to them for their industrious contributions towards illustrating that long-neglected period of our constitutional history, into an obliquity of political view in treating of the latter portion of it, which calls for serious remark. The successor in the Anglo-Saxon kingship, or executive office of the state, was constantly selected or approved by the national council; and, as Lord Lyttelton has candidly acknowledged in his introduction to the 'Life of Henry II,' not only did Harold possess the *only* right to the crown which the English nation then recognized, but the nation itself had clearly made the wisest selection it could, in choosing as the guardian of its independence at that age, the ablest and most generous-spirited statesman and warrior that it then possessed. No unprejudiced mind, indeed, can draw any other inference from a careful examination of the contemporary documents and testimonies, both of English and of continental writers, than this,—that Harold fully and admirably represented the free, bold spirit of the Anglo-Saxon people, prompt to strive, 'to the last of their blood and their breath,' against spiritual or temporal aggression upon their national independence; while in William was finely personified the combination of subtlety with ferocity, the passion for military enterprise, and the proneness to confederate with the great spiritual despotism of the age, which so remarkably characterized the leading Normans, then but a few descents removed from the piratical settlements on the southern shores of the Channel. As regards the relation between the invaded and the invaders during the actual struggle, we may sum it up in the words of Sir James Mackintosh (*Hist. of England*, I. 108):—'It was a slow, not a sudden conquest. The successive contests in which the conqueror was engaged ought not to be regarded as on his part measures to quell rebellion. They were a series of wars, levied by a foreign prince against unconquered and unbending portions of the Saxon people. Their resistance was not a flame casually lighted up by the oppression of rulers: it was the defensive warfare of a nation, who took up arms to preserve, not to recover, their independence. There are few examples of a people who have suffered more for national dignity and legitimate freedom.' They suffered much, indeed, not only in the great conflict of Hastings, but throughout the land. For instance, 'the country from the Humber northwards,' as Sir James observes, 'was ravaged with such ferocity, as to be described by the friends as well as the enemies of William in terms of indignation, which show that it far exceeded the ordinary misdeeds of conquerors, in an age when the mildest warfare was atrocious.' Yet their sufferings during the struggle were trivial in amount, compared with the protracted torture, moral as well as physical, which they endured under the regime established on their final subjugation. It had been a necessary condition of William's making this great attempt, that he should hold out the lands, the goods, and the bodies of the English, as a *prey* to his Norman followers, as well as to the mere mercenaries whom he banded together from every quarter of western Europe. The fulfilment of this promise was necessary, both to keep his fellow-adventurers true to his service, and to keep possession, for himself and his descendants, of his violent acquisition. The authentic record of Domesday, compiled by his own authority, combines with the unanimous testimony of both the Norman and Saxon writers of the period, to show us how complete

was the expropriation of the Anglo-Saxon possessors, and the introduction of the foreign military tenants. Independent of the personally despotic character of William, his position, as the commander of a conquering army, which he himself had brought together to prosecute an enterprise which he had individually planned and determined on, necessarily made him the supreme arbiter in the division of the spoil. Reserving in his own immediate possession 'the lion's share,' that is to say, all the larger cities and boroughs, and about fifteen hundred manors, he distributed the remainder of the lands and towns among about seven hundred tenants-in-chief, that is, possessors on the feudal condition of military service rendered immediately to himself. In making this distribution, regard was no doubt paid to the military rank and amount of service of the Norman claimant, as also to his length of possession previously to the digesting of the great register of the conquest; but it was from the individual will of the conqueror, as now recorded, that the claim of each proprietor thenceforward derived its sanction; and from this period must be dated the legal maxim in England, that all landed property is derived originally from royal grant. The greater tenants-in-chief, in like manner, retaining portions for their immediate use, subdivided their domains among the higher grade of their military followers, and these again among the rank beneath them; so that the whole territory was parcelled out, on this regular system of military organization, into about sixty thousand knights' fees, as they were called; each knight's fee being a portion estimated sufficient to furnish, when requisite, a man and horse completely armed for warlike expedition.

But every title to property, by inheritance or otherwise, derived from a date anterior to the Norman invasion, was now declared null and void. Very few Anglo-Saxon names were admitted on the list of William's immediate or secondary feudatories; and thus, against the great body of Anglo-Saxon freeholders in the country and in the towns, the doom of final expropriation was pronounced. With the loss of all property in the soil, the conquered people, forming the vast majority of William's subjects in England, fell into civil and political nullity. The Domesday-book itself shows us, that the very guildhalls of their municipal towns were given away, like everything else, in the division of the spoil. The highest condition of the English in the rural districts was now that of the humble farmer and the rustic artisan, whom their Norman masters called *villains*; and in the municipal towns, the townsman, or resident householder,—according to the Normans, the *burgess*,—no longer a freeholder, was placed on precisely the same social level as the *villain*—that of men not indeed personally enslaved, like the serfs or bondmen, but wholly excluded from political rights, and therefore subject, according to the feudal maxims of the Normans, besides the rent of their individual holdings, and besides the rigorous payment of the rents and services due by the old English custom, in the nature of contributions to the general exigencies of the state, to arbitrary taxation by the crown, in the shape of occasional levies, called by the Normans *tailages* or *tallages*.

Under the Anglo-Saxon government, the revenue of the king, or rather of the state, had been collected in each shire by the shire-reve, and in each municipal town by the borough-reve or port-reve. But in the one case, as in the other, this officer was the elective head of the municipality; for the shire itself was no other than a certain extent of territory municipally organized. But now, instead of the elective Saxon reve, there was placed over each shire a Norman *viscount*, and over each municipal town a *bailliff*, both appointed by the Norman king. How intolerable such a yoke as this must have been to the members of each once free community it is easy to conceive; when, in lieu of a local executive and magisterial officer of their own choice, not only their countryman, but their fellow-townsmen, they were placed under a petty agent of foreign extortion, alien to them in race, in language, and in feeling, regardless of their interests, and insolent by virtue of his immediate delegation from the conqueror or the conqueror's heir. When, also, we take into account the practice constantly resorted to by the first Norman kings, of *farming* these bailiwicks to the highest bidder, we may well cease to be amazed at the sickening pictures exhibited to us by the contemporary chroniclers of cruel and reckless extortion perpetrated upon the unfortunate townsmen of England in those reigns. The vitality of commercial indus-

try, however, in all its grades and varieties, is great, or it must have sunk under a regime like this, following upon the seizure of their most valuable moveables in the general spoliation during the actual conquest. After the first shock of its establishment, the burgesses seem soon to have rallied their energies for the recovery of their municipal freedom. It would have been vain for them to appeal to the mercy of a Norman king, but they found means of appealing to his cupidity. He discovered that their eager desire to rid themselves of the great scourge and curse of their community, the royal bailiff, urged them to offer him a higher sum to be collected from and by themselves, and transmitted directly to his exchequer, than he could farm their town for to an individual; and that their dread of the return of such a scourge would keep them punctual in their payments;—that, in short, he could make no better bargain than to farm their town to themselves instead of a bailiff;—and hence the frequent charters which we soon find issuing to one borough after another, granting it to the *burgesses* in *fee-farm*, that is, in permanent possession so long as they should punctually pay the stipulated crown-rent.

The interference of a royal provost in their internal concerns being thus withdrawn, the towns returned naturally to their former free municipal organization. They had once more a chief administrator of their own choice; though in few cases was he allowed to resume either of the old designations, *borough-reve* and *port-reve*. In all cases he now acted as *bailliff* of the Norman king; accounted at the exchequer for the farm or crown-rent of the borough: in most, he received the Norman appellation of *mayor*, which, denoting in that language a municipal chief officer, was less odious to the Saxon townsmen than that of bailiff; though in some, he received and kept the title of bailiff only.

Still, so long as the burgher communities remained wholly excluded from political existence, and their newly-recovered municipal freedom depended on the personal good faith of the monarch, who to them was an absolute despot, it was subject to frequent infringement on the part of the conqueror's successors, according as they were prompted either by caprice or by the pecuniary necessities attendant on the contests in which they became involved with powerful parties of that military aristocracy, between whom and themselves all political power was shared. Hence the frequent forfeitures of this species of charters at this period; and in many instances, the repeated re-granting, on payment of a fine, of the *same* liberties to the *same* town. London itself, though by reason of its primary importance, it was, from political expediency, the most favoured of all the English municipalities, yet was not exempt from extortion by these arbitrary stretches of power. Hence the active part which, with other large towns, it took with the barons in procuring and enforcing that solemn settlement of the limits of the royal prerogative, which was embodied in 'the Great Charter,' wherein it is distinctly expressed, that all cities, boroughs, and ports, shall have 'their liberties and free customs,'—the established formula which denoted the restoration, by charter, of their old municipal freedom.

The formation of this instrument, however, in which the leading portion of the burgher population concurred, marks one stage in the progress of Anglo-Norman society from that dismal period when a broad and impassable line of distinction separated, throughout the land, the conquered from the conquerors, the Saxon from the Norman. In a century and more which had elapsed since the Anglo-Saxon people had finally sunk into prostration and despair, the sullen hatred on the one hand and the fierce contempt on the other, had of necessity much abated; and this progress had been accelerated by the violent dissensions between the crown and the baronage, and the necessity in which the latter found themselves of courting the aid, both personal and pecuniary, of the municipal communities, then struggling into renewed freedom and activity, against the fresh bands of military foreigners whom their kings were constantly bringing in to coerce them, and to whom they were constantly threatening to transfer their seigniories. Thus was the first tendency to political co-operation established between the landed proprietary deriving from the conquest, and the trading population aspiring to regain a recognized political existence; and this tendency we shall find rapidly increasing.

* These two distinctions, among the municipal towns generally, of *cities* and *cinque-ports*, the former merely nominal, the latter implying actual pecuniary privileges, were introduced by the Normans.

Long after the first signing of the great charter, however, the levying of *tallage* upon the burgesses, as upon the *villains*, was still claimed as an inherent right of the Anglo-Norman crown, and was of itself an abundant source of vexatious oppression. To show the galling nature of this exaction, we may instance the levy made by Henry II., on pretext of a crusade, in 1087, one of the last years of his reign:—He had a list made out of the richest citizens and burgesses of all the municipal towns, and had them individually summoned to appear before him at an appointed time and place. The honour of being admitted into the presence of the Conqueror's great grandson was in this manner granted to two hundred citizens of London, one hundred of York, and to a proportionate number in the other cities and boroughs. The letters of convocation admitted neither of excuse nor of delay. The burgesses thus summoned were received a certain number at a time, at several different days and places; and as each band presented themselves, it was notified to them, from the Norman sovereign, through an interpreter, what sum he required from them. 'And thus,' says a contemporary historian (Roger de Hoveden, *Annales*), 'did the king take from them a tenth of their properties, according to the estimate of good men and true, that knew what income they had, as likewise what goods and chattels. Such as he found refractory he sent forthwith to prison, and kept them there until they had payed the uttermost farthing. In like manner did he to the Jews within his realm, which brought him incalculable sums.' This assimilation of the great mass of Anglo-Saxon burgesses to the Jews gives us the exact measure of their political condition at the commencement of the second century of the regime of the conquest.

To the sagacity of Simon de Montfort, the great earl or rather count of Leicester, who led the national resistance to the tyranny of the weak and treacherous Henry III., the first general summoning of representative citizens and burgesses to parliament seems to be attributable, for it was in the year 1265, while Henry was a captive in De Montfort's power, after the battle of Lewes, that, in calling a parliament, he issued the earliest writs requiring each sheriff of a county to return, together with two knights for the shire under his jurisdiction, two citizens for each city and two burgesses for each borough within its limits. Although the defeat and destruction of De Montfort, shortly after, by the exertions of Prince Edward, appears to have prevented this plan of representation of the commons from taking immediate effect, yet it was permanently adopted by Edward himself, at least from the twenty-third year of his reign, as an amelioration which, under the existing internal circumstances of the country, sound policy dictated.

It is plain, however, that in this little was immediately contemplated by Edward beyond the facilitating of the extraordinary supplies of money, indispensable for the prosecution of those schemes of national aggrandizement which so actively and steadily occupied his vigorous reign. The barbarous contempt with which a military aristocracy, so recently sprung from a desolating and expropriating conquest, regarded the great agent of civilization, commerce, though its harshness was abating in proportion as the broad distinction between Norman and Saxon was disappearing in the fusion of blood and language which produced the *Anglo-Norman* stage of society in England, still subsisted in almost its original force. A curious illustration of this appears in a statute of the middle of the preceding reign, which enacts that feudal 'lords, who marry those they have in ward to villains or others, as *burgesses*, whereby they are disparaged, shall lose wardship, and the profit shall be converted to the use of the heir for the shame done to him.' The advantage immediately derived to the burgess population from the substitution for the arbitrary and vexatious mode already described of summoning their deputies to the king's court for the purposes of taxation, of the uniform practice of calling them together at the same times and places at which the established estates of the Anglo-Norman parliament were convened, was, not so much the lightening of their pecuniary burdens on the whole, as the effecting and maintaining a more equal and regular distribution of them. The Anglo-Norman king and his great council, into which, among the laity, none but his immediate feudal tenants and a few summoned by his personal letters were yet admitted, still claimed and exercised the power of taxing the burgesses almost at discretion. Although the *knights of the shires*, at that period, that is, the repre-

sentatives of the county freeholders at large, were first regularly summoned to attend on parliament at the same time as the representative burgesses, and, like them, for the purpose of taxation only, yet they and the burgesses were for some time longer regarded as forming two distinct representative bodies. Thus the writs for the parliament of the 23rd of Edward I. expressly direct that the elected citizens and burgesses shall have full power to act on behalf of the citizens and burgesses at large separately (*separatim*) from the county representatives, for transacting what shall be ordained by the great council (whose composition is above described) 'in the premises,' that is, in providing remedies for the dangers of the kingdom, as set forth in the preamble of the writ, sufficiently intimating that a 'grant of supply,' as it is now termed, was a primary object of this parliamentary convocation. And we find that while the county freeholders at large, as regards the rate of impost on their personal property, were placed on the same level as the tenants-in-chief, the citizens and burgesses were constantly called upon to give a full third more.

This very circumstance, however, the large proportion which they were made to bear of the burden which each great pecuniary exigency of the state imposed, inevitably accelerated their advance towards the attainment of a permanent control over all the great operations of government, by rendering their peaceable assent to the several propositions the more indispensable. The lasting establishment just described, of the practice of convoking them collectively, at the same places and times as the legislative estates of parliament, indicates the first great step in this progression. Arbitrary intimidation was no longer felt to be the best means of exacting through the town delegates the desired contributions. It was found expedient that they should at least hear the objects stated and discussed, to which the proceeds were to be applied. Their second step naturally was, to exercise a judgment on the wisdom and fitness, first of the objects themselves and next of the means by which they were to be prosecuted. So rapid was the march of the delegated body of citizens and burgesses in this career that, in the year 1297, the 25th of Edward I. we arrive at the first solemn recognition of their political existence in the *statutum de tallagio*, which has been commonly called *statutum de tallagio non concedendo*, by which the right of taxing them arbitrarily was finally relinquished. The statute declares—'No tallage or aid shall be taken or levied by us or our heirs in our realm without the good will and assent of the archbishops, bishops, earls, barons, knights, burgesses, and other freemen of the land.' At this date then we may fix that important step in the constitutional progression, the union of the representative freeholders or knights of the shire with the representative citizens and burgesses in one assembly.

In the great national measure of the year 1327, which closed the calamitous reign of the second Edward, we find them confounded together under the general name of *commons*, by whose 'council and assent,' as well as by that of 'the prelates, earls, barons, and other great men' of the kingdom, it is stated in the writs issued to the sheriffs on that occasion by the young Edward to proclaim the latter king, that his father had 'removed himself' (that is, had been deposed), and he (the younger Edward) had taken upon him the government.

And according to the preamble of the statutes made at the first parliament of Edward III., the acts were passed 'at the petition of the commons presented to the king in his council of parliament, by the assent of the prelates, earls, barons, and other great men.' This form of *petitioning* the king in parliament, that is, in the baronial assembly or house of lords, was long the only mode possessed by the commons of introducing a measure sanctioned by themselves into that higher assembly, and remained a memorial of their first seemingly timid advances towards the complete legislative character, until, on their attainment of the latter station, they abandoned the term *petition* for the more businesslike and less submissive one of *bill*.

In this very reign of Edward III., they proceeded so far as to claim an absolute veto upon all enactments affecting those great bodies of the people which they represented, by declaring to the king in parliament that they would not be compelled by any of his statutes or ordinances, *made without their assent*. Edward III. had too much general sagacity, and was too mindful of the popular concurrence in the revolution which had deposed his father, to seek to

oppose or evade this legislative assent of the Commons; but under his misguided grandson and successor, Richard II., the principle of treating the government of a nation as a private patrimony was revived. The contest between the court of Richard and the great body of the nation forms one of the most interesting epochs of English parliamentary history. In this place it is only important to exhibit a clear outline of it, as forcibly marking the complete attainment by the representative citizens and burgesses of that legislative character to which they had been constantly tending since the time of Edward I., the acquisition of which revived in the municipal bodies, by and from which they were elected, that political life which, under the regime of the Conquest, had so long been extinct.

In the seventh year of Richard's reign the commons in parliament made complaints of the government of the realm, and of the abuses which existed in every department of the state, especially in those of law. The king consented that certain prelates and lords should be appointed to examine into these abuses. The commons, recounting their grievances, demanded redress: this he refused until they should have granted him a further supply; to which they would not accede. In the tenth of his reign, the commons sent him the following message:—'We have it settled and confirmed by antient constitution from a laudable and approved custom, which none can gainsay, that the king ought to assemble his nobles and commons of the kingdom once a year unto his parliament, as the highest court of the realm, in which all equity ought to shine bright, without any spot, clear as the sun, and wherein poor as well as rich may find a never-failing shelter for their refreshment, by restoring tranquillity and peace, and removing all kinds of injuries; where all public grievances or errors are to be redressed: and wherein, with the most prudent counsel, the state and good government of the kingdom is to be treated of; and considering that the king and nation's foes at home, and their enemies abroad, may be discovered and repulsed by such means as most conveniently and honourably may be done; and also with wholesome deliberation therein to foresee and order how the necessary burthens of the king and kingdom may, with most ease (the public wants considered), be supplied: they conceive also, that since they are to support all public charges incumbent, they should have the supervisal how and by whom their goods and fortunes are to be expended: they say, moreover, that this is their privilege by antient constitution; that if the king wilfully estrange himself from his parliament (no infirmity or necessary cause disabling him), but obstinately, by his ungovernable will, shall withdraw himself, and be absent from them for the space of forty days, not regarding the vexations of his people, nor their grievous expenses; that then, from that time, it shall be lawful for all and every of them, without any damage from the king, to go home, and return into their own countries; and now you, for a longer time, have absented yourself; and, for what cause they know not, have refused to come among them.' The king, in his answer, declared his intention of calling in the French to assist him in the attack which he meditated on the national liberties. The barons replied, that such a step would lead to his destruction; that all his misfortunes were owing to his ministers, who governed him and the kingdom; that unless some means were used to put an end to these grievances, the state would be ruined, and that by the antient constitution, if the king refused to govern by the laws and statutes of the realm, it was lawful for his people, by their full and free assent, to depose him. The king felt himself constrained to yield; and eleven commissioners were named in parliament, to reform all abuses that had arisen since the reign of Edward III. On this occasion, the commons asserted their character and exercised their power, as guardians of the public purse, by calling Sir Simon Burley to account for a large sum of the public money which he had wrongfully expended; and not giving a satisfactory answer, he was committed to the Tower. Another striking illustration of the political importance they had attained appears at this time, in their first conspicuous exercise of the right of impeachment, against Richard's chancellor and prime minister, De la Pole. But eleven years afterwards, in 1398, this king, to procure a house of commons more suited to his own purposes, resorted to a perilous expedient. He summoned the several sheriffs, and charged them to suffer none to be

elected and returned members to this parliament who would not promise to agree to the king's measures; at the same time declaring he would raise an army to punish such of his subjects as should offer to oppose his intentions, and asking them what force each county could assemble. The sheriffs answered that the people would never bear being deprived of the freedom of elections; and that, as for raising an army, they would never take up arms to oppose those barons who had gained the affections of the people by defending their rights and privileges. Richard however, by one means or other, succeeded in obtaining his packed house of commons, which by ministering servilely to his tyrannical will hastened his overthrow. The very next year, the national indignation and resistance, coinciding with the personal views of the exiled Henry of Lancaster, swept away the falsely-based fabric of his power, reduced him to the condition of a suppliant captive, and compelled him to call 'a free parliament,' the first act of which was his own solemn impeachment, condemnation, and deposition.

The greater regularity of proceeding in this revolution than in that which had set aside Edward II. marks the rapid growth of political intelligence among the body of the people, and more particularly of that town population which furnished so preponderating a numerical proportion of the commons' house. On this occasion, as we find in the rolls of parliament, the new king and the lords made a full and explicit acknowledgment of the equal rights which the commons possessed with the latter in matters of legislation, of taxation, and of counsel to the crown.

Under the regime of the Conquest, the aspirations of the townsmen for the recovery of their antient municipal and political freedom were embodied in prayers for the restoration of 'the laws of Edward the Confessor.' When, in the progress of Anglo-Norman society, the municipal rights of cities and boroughs were included with the civil and political rights of the barons, knights, and freeholders, in 'the Great Charter,' the latter solemn instrument became the watchword of the burgess population. But from the historical period at which we have now arrived, when to the restoration of their municipal independence were added the recovery and full recognition of their political existence, 'a free parliament' became the constant cry of the citizens and burgesses in common with the great mass of the nation, when the common liberties were conceived to be in danger.

The support of a house of commons possessing the popular confidence was henceforward indispensable to the security of any government in England. The rash and blind attempt to govern without a house of commons at all was never again made until a Stuart reigned; and the scarcely less rash attempt to govern by a house packed in defiance of so many solemn enactments to secure the purity of elections, was the true cause of the fall of the house of Lancaster in the reign of Henry VI.; as the sanction of a real popular representation formed the basis of its permanent restoration in that of Henry VII. Until the accession of the Stuart family, almost every administration, even the most arbitrarily inclined, was persuaded that *management*, not *coercion*, was the only safe course to be pursued by the crown towards that assembly. There were two modes of exercising this management; first, by influencing the returns of members; secondly, by tampering with individual members when returned. The latter expedient could be little resorted to until later periods, and belongs indeed rather to the history of the Commons' House in general; but the practice of the former demands a brief notice, in as far as it relates to the immediate object of this article.

The great instruments of the crown in influencing the composition of the popular representation, especially of the borough portion of it, were, the *sheriffs* of the several counties returning members, of which, in the time of Edward I., there were thirty-seven; Durham and Cheshire having then palatinate parliaments of their own, and Monmouthshire being part of Wales, which was not yet legislatively incorporated with England, nor even effectively subjected to the English crown. It was as the king's *bailliff*, that is, as local superintendent and collector of the crown revenues, that the precepts for election of knights, citizens, and burgesses, were addressed to this officer; he was to make returns for every city and borough in his *bailliwick*,—another mark of the original purpose for which the popular representatives were convened, that of taxation only. So long as this continued to be the sole object of their con-

vocation, and so long as the delegated burgesses themselves had little voice in fixing the rate of impost to be levied on their constituents, it is not surprising that the smaller boroughs in particular should often have petitioned to be excused from the sending of delegates on these occasions, which added to their share of the public burden, the expense, to them considerable, of the wages which by royal writ they were to pay their representatives during their absence on this parliamentary service, and which were fixed at two shillings each per day, being one half the amount appointed to be paid by the county freeholders on the like occasion to a knight of the shire. As the king's writ addressed to the sheriff specified no particular city or borough, but required him in general terms 'to cause to be elected two citizens for each city, and two burgesses for each borough in your bailiwick,' a sort of discretionary power seems to have rested with the sheriff of determining what towns were qualified to send representatives. Thus we find the returns made by these officers concluding sometimes with the words 'there are no more cities or boroughs in my bailiwick,' though there were in fact more boroughs; and sometimes ending with 'there are not any other cities or boroughs within the county from which any citizens or burgesses can or are accustomed to be sent to the said parliament, by reason of their decay or poverty.' Immaterial as this circumstance in the original framing of the parliamentary writs might appear at the time, its results have been momentous. It must have been remote indeed from the contemplation both of Simon de Montfort and of Edward I., that in convoking so large a number of delegates from towns, in order to tax them with greater facility and uniformity, they were laying the foundation of a separate house of legislature, wherein the representatives of that part of the population most alien to the feudal organization should vastly preponderate. They evidently looked not so far, nor suspected any latent danger in the generality of the terms in which these precepts were couched. But when the commons came to assert and establish their claim to a full and free legislative voice, and it consequently became of the highest importance to the crown to secure to itself any and every means of influencing the composition of that assembly, there was one expedient to which it was too late to resort, that of singling out boroughs for representation, or omitting them at pleasure. The contrary precedent was firmly established—that, through the sheriff, every city and borough was to be summoned; the original terms of the writ were grown into an inviolable constitutional maxim; and in the fifth of Richard II., the Commons were already sufficiently powerful to procure statutory enactments imposing a fine on any sheriff who should not *literally* obey the writ, and subjecting *citizens and burgesses*, as well as others having parliamentary summons, to be 'amerced or otherwise punished' for non-attendance. And although notorious inability, from devastation by war or other calamity, to pay the parliamentary wages of representatives, continued long after to be admitted as a valid plea of exemption from electing in the case of individual boroughs, the great principle of the *right* of every municipal town to be summoned, and its *duty* to return members, if capable, was constantly and firmly maintained.

The power of interference on the part of the crown therefore was thus limited to the influencing, chiefly through the agency of the sheriffs, of the returns of individual members. And here an important innovation introduced by the Norman conquest must be borne in mind. The shire-reve of the Anglo-Saxons was subject to annual election by the freeholders of the shire; but the Anglo-Norman sheriff, at the period in question, as at present, was nominated by the king, and consequently was immediately responsible for the exercise of his various functions, not to any popular constituency, but to the crown. Accordingly we find early symptoms of the indirect influence which the crown, by means of this officer, exercised in parliamentary elections, in the statute of the 7th of Henry IV. (1406), passed 'on the grievous complaints of the commons against undue elections for shires from the partiality of sheriffs,' and enforced by another of the eleventh of the same reign, enacting heavy penalties upon sheriffs who proceeded irregularly in elections, or made illegal returns; as also, probably, in that of the first year of Henry V., which, amongst other provisions for the due conduct of elections, enacts that the citizens and burgesses should be chosen out of those who were free of and dwelling in the respective cities and boroughs.

The preamble of a statute of the 23rd of Henry VI., confirming former acts relative to elections, is more explicit on this head. It recites, 'That the citizens and burgesses of cities and boroughs coming to the parliament should be chosen men, citizens, and burgesses, resident, abiding, and free, in the same cities and boroughs, and none other; which citizens and burgesses have always in cities and boroughs been chosen by citizens and burgesses, and no other, and to the sheriffs of the counties returned, &c., until now o' late that divers sheriffs of the counties of the realm of England, for their singular avail and lucre, have not made due election of the knights, nor in convenient time, nor good men and true returned, and sometimes no return of the knights, citizens, and burgesses lawfully chosen to come to the parliament, but such knights, citizens, or burgesses have been returned which were never duly chosen, and other citizens and burgesses than those which by the said mayors and bailiffs were to the said sheriffs returned, and sometimes the sheriffs have not returned the writs which they had to make election of knights to come to the parliament, but the said writs have imbeilled, and moreover made no precept to the mayor or bailiff, or to the bailiffs or bailiff where no mayor is, of cities and boroughs, for the election of citizens and burgesses to come to parliament, by colour of these words contained in the said writs, "Quod in pleno comitatu tuo eligi facias pro comitatu tuo duos milites, et pro quolibet civitate in comitatu tuo duos cives, et pro quolibet burgo in comitatu tuo duos burgenses."

Herein we find a remarkable illustration of the daring attempts which the shortsighted advisers of the imbecile king Henry VI. were making to vitiate the constitution of the commons' house. The interpretation which the sheriffs were instructed to put upon the somewhat ambiguous terms of the established formula of the writs is peculiarly characteristic of their line of policy in this matter. The Latin text given above, literally rendered, would run thus:—'That in full county court you cause to be elected for your county two knights, and for each city in your county two citizens, and for each borough in your county two burgesses.' It required no small stretch of temerity, in an age when the people were peculiarly jealous of the freedom of parliamentary election, to venture, in spite of the plainest common sense and of the notoriously prescriptive usage, to assert, and act upon the assertion, that the original purport of the writ was, that the *citizens* and *burgesses*, as well as the knights, should be elected, under the sheriff's superintendence, in the *county court*.

The government of the day however had no doubt been emboldened to these proceedings against the political liberty of the municipal towns by the success of their first steps against the freedom of parliamentary election in the enactment and operation of the disfranchising statutes of the 8th and 10th of this reign, which limited the county suffrage to the freeholders of forty shillings a year—an amount in that day considerable. But their practices against the representative freedom of the cities and boroughs produced the following enactment, in pursuance of the preamble given above:—'That every sheriff, after the delivery of any such writ to him made, shall make and deliver, without fraud, a sufficient precept under his seal to every mayor and bailiff, or to bailiffs or bailiff where no mayor is, of the cities and boroughs within his county, reciting the said writ, commanding them by the said precept, if it be a city, to choose, by citizens of the same city, citizens; and in the same manner and form, if it be a borough, burgesses by the burgesses of the same, to come to parliament. And that the same mayor and bailiff, or bailiffs or bailiff where no mayor is, shall return lawfully the precept to the same sheriffs by indentures betwixt the same sheriffs and them to be made, of the same elections, and of the names of the said citizens and burgesses by them so chosen; and thereupon every sheriff shall make a good and rightful return of every such writ, and of every return by the mayor and bailiff, or bailiffs or bailiff where no mayor is, to him made. And that every sheriff, at every time that he doth contrary to this statute, or any other statutes for the election of knights, citizens, and burgesses, to come to the parliament before this time made, shall incur the pain contained in the said statute, &c. And such, as regards the obligation of the sheriff duly to issue his precept to the cities and boroughs, and duly to receive and transmit the returns, has the law continued to be until the present time.

The parliamentary incorporation with Google of the

Welsh territory, and of the palatine county of Chester, one of the most beneficial operations of the reign of Henry VIII., next demands our notice, as bringing a permanent accession of thirty-one members to the English House of Commons, of whom fifteen were returned for cities and boroughs. In this legislative incorporation of Wales and Cheshire a new principle was introduced, that of determining by parliamentary enactment what towns within a particular territory should elect members, and what number they should elect. The case indeed was perfectly novel, no territorial extension of the parliamentary representation having ever been agitated since the time when the House of Commons was in embryo in the earliest royal convocations of knights, citizens, and burgesses for the assessment of taxes. The Welsh had been smarting under the yoke of conquest since their final subjugation by Edward I.; their continued exclusion from the English legislature must have mainly contributed to stimulate their vigorous and persevering resistance under Glendower in the reigns of Henry IV. and V.; and their admission into it was become a measure most desirable for the national peace and security. But the free concurrence of the House of Commons itself was now indispensable. The nature and uses of popular representation too, and the importance of having some regard to the proportion between the number of a constituency and that of the representatives which it should be permitted to elect, were now better understood. Accordingly the act for Wales, passed in the 27th of Henry VIII., though it excluded none of the boroughs from a share in the representation, yet, having regard to the inconsiderable size of most of them, enacted that, while the county of the town of Haverfordwest should send one member for itself alone, the boroughs of each of the other thirteen shires now created (including Monmouthshire, now first detached from Wales) should send one member collectively, excepting only Merionethshire, which contained no borough of importance. This perfect union with Wales rendering the palatine government of Cheshire, originally established as a bulwark against the Welsh inroads, no longer necessary, another act, of the 34th of this reign, incorporated it in like manner with England, in like manner also expressly limiting the town representation to the city of Chester.

Here we must pause in our sketch of the political relations of the English boroughs, to trace the progress of their internal organization from the state of simplicity in which it revolved on the first relaxation of the yoke of the Conquest. It is only necessary to recollect the nature of the relation subsisting between the English boroughs and the Norman kings in the period during which they successively purchased their civil redemption, in order to be convinced that the local comfort and welfare of the burgesses were objects of little solicitude to those monarchs—that their primary aim was the securing of the regular, punctual, and willing payment of the stipulated rent, and the ensuring in each locality of so much internal peace and order at least as to them might seem requisite for enabling the community to perform this stipulation with exactness. Further than this they concerned themselves not at all about the internal regulations of the municipality. Its whole community, now rising again from one and the same level of civil nullity, were at liberty to adopt either the ancient customs and usages of the place as existing before the Conquest, or such others as they might think proper to establish in accordance with the common law of the land. The charters were constantly addressed to ‘the citizens,’ ‘the burgesses,’ or ‘the men’ of such a city or borough; and the sum of the description of a burgess, townsman, or member of the community of the borough, as Madox in his *Firma Burgi* observes, was this:—‘They were deemed townsmen who had a settled dwelling in the town, who merchandized there, who were of the hans or guild, who were in lot and scot with the townsmen, and who used and enjoyed the liberties and free customs of the town.’ The municipal body, in short, consisted of the resident and trading inhabitants, sharing in the payment of the local taxes and the performance of the local duties. This formed substantially a household franchise. Strangers residing temporarily in the town for purposes of trade had no voice in the affairs of the borough nor any liability to its burdens, which, at common law, could not be imposed upon them without admission to the local franchise. The titles to borough freedom by birth, apprenticeship, and marriage, all known to be of very remote antiquity, seem to have been only so

many modes of ascertaining the general condition of established residence. The title by purchase was a necessary condition for the admission of an individual previously unconnected with that particular community, in those days when such admission conferred peculiar advantages of trading; and the right of bestowing the freedom on any individual by free gift, for any reason to them sufficient, was one necessarily inherent in the community, for the exercise of which they were not responsible to any authority whatever. The freemen’s right of exclusive trading too had some ground of justice when they who enjoyed it exclusively supported the local burdens. Edward III.’s laws of the staple authorized the residence of non-freemen in the staple towns, but at the same time empowered the community of the borough to compel them to contribute to the public burdens; and under these regulations it is that the residence of non-freemen appears first to have become frequent.

The progress of wealth, population, and the useful arts, produced, in many of the greater towns, the subdivision of the general community into *guilds* of particular trades, called, in many instances since the Norman era, *companies*, which thus became avenues for admission to the general franchise of the municipality. In their greatest prosperity these fraternities, more especially in the metropolis, became important bodies, in which the whole community was enrolled; each had its distinct common-hall, made by-laws for the regulation of its particular trade, and had its common property; while the rights of the individuals composing them, as members of the great general community, remained the same.

But for several centuries after the Conquest, any select body forming, within a municipal town, a corporation, in the modern sense of the term, was entirely unknown. When the men of a town became answerable to the crown for a *ferm* or other payment due from their community, then the barons of the exchequer, the king’s attorney, or his other clerks and officers, charged, impleaded, and sued the townsmen collectively, by any name by which they could be accurately designated, and they answered by one or more of their number, deputed for that purpose by the rest. There was also a method of summoning a community to appear in the king’s courts of law, by six or some other number of ‘the better and more discreet’ inhabitants, to be nominated by the rest. The duties of the boroughs to the king were rendered entirely by their executive officers, elected yearly by the whole community. Generally it was granted to them to elect a single chief magistrate, bearing, as already observed, the Norman title of mayor, who became answerable to the crown for all things in which the bailiff or bailiffs were previously responsible, and the officers bearing the latter title declined to an inferior rank. The executive officer, thus elected, it was always necessary to present to the king, or some one appointed by him, to be accepted and sworn faithfully to discharge his duties both to the crown and to the community; and to receive these presentations, accept the officer elected, and take his oath, became a part of the duties of the treasurer and barons of the exchequer. To these, when the citizens or burgesses had made their election, it was notified by letters under their common seal, and the mayor elect was presented to them at the exchequer by two of his fellow-burgesses. The same proceeding was observed with regard to *sheriffs*, which some of the larger cities and towns acquired power to elect as counties of themselves; and for the like reason, because of the duties they had to render to the king. In course of time communities acquired by charter the privilege of taking the oaths of their own officers, or they might be tendered to the constable of the nearest royal castle. If such officer performed any official duty without being duly sworn, it was deemed a contempt, and the liberties were liable to be seized into the king’s hands, unless redeemed by fine or a valid excuse.

But the sole legislative assembly in every municipal town or borough was originally the Saxon *folk-mote*, or meeting of the whole community, called in many places the *hundred*, and where held within doors, the *hus-ting* or the *common hall*. This assembly was held for mutual advice and general determination on the affairs of the community, whether in the enacting of local regulations, called *burgh-laws* (by contraction *by-laws*, since often corrupted into *bys-laws*), the levying of local taxes, the selling or leasing of public property, the administration of justice, the ap-

pointment of municipal officers, or any other matter affecting the general interests. In this assembly, held commonly once a week, appeared the body of burgesses in person, to whom, together with their officers, whom they elected annually, every general privilege conveyed by the royal charters was granted; and however vested in later times, every power exercised in the antient boroughs has derived its origin from the acts of this assembly. How the increase of population and extension of trade in the larger towns led naturally to the introduction of the representative principle in local legislation, &c., and the natural tendency of its operation towards the production of an aristocratic organization, will be best illustrated in a succinct view of the history of the metropolitan municipality itself, the magnitude of which has afforded the fullest scope for the distinct development of these tendencies.

Although William of Normandy, in consolidating his conquest, had trampled out even those scattered sparks of political vitality which in the course of his invading career he had spared in order to deaden or shorten local resistance, yet his successors soon found it to their purpose, though still retaining the arbitrary grasp of the Norman crown upon the municipal liberties and properties of the Anglo-Saxon townsmen, to exercise that power in the case of the more important cities and ports with somewhat less harshness than William had done. Thus it was that London in particular, and the sea-ports on the south-eastern coast, then of primary importance to the Norman crown for maintaining a free communication with its continental dominions, as well as supplying its naval force, were early objects of royal favour—for some time indeed capriciously extended and withdrawn, but settling into permanence with the growth of Anglo-Norman society. Another circumstance contributed to give to these towns the lead in the general progress of the burgess population towards the recovery of their civil and political freedom. Though the great majority of the burgesses, even in these favoured towns, were necessarily of Anglo-Saxon blood, yet there were soon found among them a certain number of foreign descent, Norman, Angevin, or French, whose ancestors, having settled in England at the Conquest, had applied themselves to various branches of trade. To these individuals, on account of the identity of race and language, the favour of the Norman government was least reluctantly extended; they became, too, the natural interpreters and mediators between the government and the great body of their fellow-townsmen; and the necessary tendency of these two circumstances combined, was to establish in the great metropolitan municipality a *Norman* party, vastly inferior to the English one in numbers, but dominant in position. This is the true key to the solution of many remarkable and, without it, scarcely intelligible transactions in the early municipal history of London. The operation of these circumstances is very clearly and strikingly exhibited in the great civic commotion in the time of Richard I., in which the most conspicuous actor on the popular side was a citizen of Saxon descent, to whom, from his adherence to the custom of his forefathers in wearing his beard long, the Normans gave the cognomen *la barbe*, and whom our modern historians call William Long-Beard. We find this transaction very particularly detailed in the Latin historians of the time, both on the popular and on the Norman side—Roger de Hoveden, Math. Paris, Math. of Westminster, Gervase of Canterbury &c. The facts collected from their joint testimony, as far as they relate to our present inquiry, are these:—

Among the vexations which the poorer and more numerous class of the citizens had to endure from the more opulent, one of the most frequent was the unfair apportioning of the payment of the *tailles* or *tallages*, the nature of which arbitrary exactions we have already described; for sometimes the mayor and aldermen, to whom the royal demand of a fixed sum was addressed, would exempt those who were most able to pay from contributing at all; sometimes they ordained that each citizen should contribute the same sum, without any regard to the respective amount of property; so that the heaviest burden constantly fell on those who were the least able to bear it. In the year 1196, when Richard I. was engaged abroad in making war upon the King of France, and his officers in England were raising money for the expenses of his campaigns, and for paying the remainder of his ransom due to the Duke of Austria, the city of London

was summoned to pay a tallage extraordinary. The mayor and his councillors accordingly convoked a husting, or common-hall, to deliberate as to the proportions in which the gross sum required should be individually imposed. The leading citizens were, as usual, for a partition of the burden, so made as that the lightest portion of it would fall upon themselves. But the Man of the Long Beard stood forward to oppose their intention. He had often before pleaded the cause of his poor English fellow-citizens with more ardour than success, and had gained from them the title of defender or advocate of the poor. Inheriting from industrious parents a competent personal property, he had retired from business, and gave all his leisure to the study of the law, to enable him to extricate the poorer citizens from the toils cast about them by the Norman lawyers. While his English eloquence was vigorous and popular, no Norman clerk excelled him in the art of pleading in French, the only language then admitted in the tribunals. While the use to which he devoted these talents made him dear to the citizens of the middling and lower rate of fortune, the Norman party charged him with misleading the multitude, by filling them with 'an inordinate desire of liberty and happiness.' On the occasion in question, they loaded him with reproaches, and accused him of rebellion and treason against the king. 'The traitors to the king,' replied the Englishman, 'are they who defraud his exchequer by exempting themselves from paying what they owe him, and I myself will denounce them to him.' Accordingly, he crossed the sea, went to King Richard's camp, knelt before him, and solicited his peace and protection for the poor people of London. Richard received his complaint, promised redress, and when the petitioner was gone, thought no more of it, being too much occupied with his great political concerns to attend to a quarrel among *mere burgesses*. But the Norman barons and prelates, filling the high offices of the chancery and the exchequer, gave their attention to it, and took part warmly, through national and aristocratic instinct, with the dominant party, against the poorer classes and their advocate. Hubert Walter, Archbishop of Canterbury, and *grand justicier* or chief justice of England, provoked that a Saxon should have dared to lay an information before the king against men of Norman blood, and resolved to prevent the recurrence of such a scandal, issued an ordinance, forbidding any man of the commonalty of London to go out of the city, on pain of being seized as a traitor to the king and kingdom; and accordingly, a number of traders, who, notwithstanding the chief justice's orders, went on their ordinary business to the great fair at Stamford, were seized and thrown into prison. These acts of violence caused a great ferment in the city, and the poorer classes of the citizens entered into an association for their common defence. William Long-Beard, relying probably on the king's promise, was the soul and leader of this secret society, in which we are told by several historians of the time that fifty thousand persons engaged. They gathered together such weapons as were accessible to burgesses in their state of half-bondage,—as staves shod with iron, axes, and iron crowns,—to attack, in case of a conflict, the fortified dwellings of the Normans. They then held several meetings in the open air, at which William addressed them, and encouraged their enthusiasm. Meanwhile, the high Norman functionaries convoking in parliament, at London, the bishops, counts, and barons of the neighbouring provinces, cited the people's orator to appear before that assembly. William obeyed the summons, escorted by a great multitude, calling him saviour and king of the poor. This unequivocal indication of an immense popularity intimidated the barons in parliament. They postponed the consideration of the charge to an early sitting, which never took place; and used all their efforts, by skilful emissaries, to work upon the popular mind. False promises and false alarms, alternately circulated, lulled the public ferment, and discouraged the partisans of the insurrection. The archbishop and the other justices then themselves called several meetings of the poorer Londoners, and addressing them, now on the necessity of keeping peace and order, now upon the king's power to crush the seditious, they succeeded in sowing doubt and hesitation among the conspirators. Seizing that moment of languor which has always been fatal to a popular party, they required to have delivered to them, as hostages for the public tranquillity, the children of a great many families of the middle and lower classes. The citizens wanted resolu-

tion to resist this demand; and the cause of arbitrary power was gained as soon as the hostages were led away from London to confinement in different fortresses. The particulars of the subsequent seizure, summary condemnation, and execution of the popular advocate, and the reputation of martyrdom bestowed upon him by the popular affection, are immaterial to our present purpose. This historical anecdote is introduced merely to exhibit distinctly the source and operation of the first aristocratical distinction that arose in the leading English cities and towns.

But as the distinction of *race* became lost in the fusion of blood and the rise of the modern English tongue, other circumstances sprung up, tending to create and perpetuate a distinction of civic *classes*. The progress of individual wealth, as commercial property became more secure against exactions by arbitrary power, and the commercial resources of the country became developed, was among the most powerful of these causes. The necessity, too, for the convenient transaction of the affairs of a multitudinous body, of establishing a representative council for the management of all ordinary business, was another cause operating in the same direction. In London, as early as the close of Henry III.'s reign, the aldermen, and those calling themselves 'the more discreet of the city,' made an attempt to elect a mayor, in opposition to the popular voice; which, however, ended in the triumph of the latter, in a general folk-mote held at St. Paul's Cross. In the reigns of the first three Edwards, it appears that the same election was made by the mayor, aldermen, and a varying number of freemen elected out of each ward. The aldermen, in their original constitution, were only a council to the mayor in the administration of justice and in his other duties, elected annually by the freemen of the several wards; and from them the mayor might resort for advice to the commonalty in general meeting. At an early period, however, the great number of the citizens, and the variety of business to be transacted, made it necessary for them to have a sort of standing committee of their body, to be consulted by the mayor and aldermen, and to exercise the power belonging to the common-hall, in the enacting of bye-laws, and the general administration of the affairs of the community. The whole of this legislative and administrative body, being chosen yearly by and from the commonalty at large, acted under the most direct responsibility to their constituents. Such a council appears, from the city records, to have existed as early as the year 1284: but though it is now deemed in law to be a prescriptive body, this is attributable rather to its not deriving its existence from royal charter, than to any certainty of its existence before the time of legal memory. Its numbers and constitution were often changed. Nearly thirty years after the express recognition, by charter, of the 15th of Edward III., of the power in the citizens to make bye-laws, it was, by consent of all the commons of the city ordained that each of the *mysteries* (*masteries* or *crafts*), that is, each of the trading companies, should choose certain persons to assent to and ordain, with the lord-mayor and aldermen, whatever they should deem advisable; to elect the mayor and sheriffs; and to give counsel in all cases where it was formerly sought of the commons. This was in the 43rd or 44th of Edward III., and was confirmed in the 50th of the same reign: but the common-hall or court of hustings of the whole community still retained the right of re-modelling the municipal legislature; and in the 7th of Richard II., the common-council was placed on its present footing by an act of common-hall, passed in the presence of the 'immense community,' to the effect that, as in such large assemblies things had been done more by clamour than by reason, the aldermen, when, on St. Gregory's day in each year, they were appointed for the year ensuing, should be firmly charged, fifteen days after the said day, to assemble their respective wards, and, by good deliberation, charge them to choose four of the most sufficient persons in their ward, to be of the common-council for the year ensuing, &c., provided that of the whole number no more than eight should be of one *mystery*. Except as to the prescribed numbers, which were not strictly adhered to, this act of common-hall took full effect; the whole administrative powers of the community were transferred to the legislative body, composed of mayor, aldermen, and common-councilmen, all subject to annual election; and the antient hustings-court fell into comparative desuetude; although, on one subsequent occasion, in the 23rd of Henry VII., we find the mayor, aldermen, common-

council, and commons, acting together as one great common-hall, in accordance with the original constitution.

Such was the natural origin of the courts of aldermen and common-council in the city of London; and how closely analogous was their rise in other communities, is abundantly testified by existing documents.

In those instances where the whole of the citizens or burghesses were numbered in the several trading companies, these, for convenience sake, sometimes formed the basis of the internal polity of the community, and the election of borough officers and members of the common council became vested in them. London itself presents at this day a remarkable instance of incomplete progression from the household franchise to the adoption of that of the guilds: the inhabitant freemen elect the aldermen and common-councilmen; while the *liverymen*, or members of the several companies (so denominated from the distinguishing peculiarities of costume adopted by each fraternity), resident or non-resident, elect the mayor, sheriffs, chamberlain, and other officers. But, in many boroughs, this basis of the guilds wholly superseded the original scot-and-lot franchise; and in the changes of society which have gradually reduced the guilds from their original position, that thorough substitution has been one constantly growing cause of unfair exclusion. The richest and most influential persons, too, being generally chosen by the inhabitants at large to the highest places in the municipal councils, were often tempted to seek the perpetuation of their authority without the necessity of frequent appeals to the popular voice, and even to usurp powers which it had not delegated at all. Such usurpations however were often vigorously resisted by the community at large; and the contests were sometimes so violent and obstinate as to lead to bloodshed. But in course of time, the Crown itself, so long indifferent to the details of municipal arrangements, found sufficient motives for encouraging these endeavours of internal parties to form close ruling bodies, irresponsible to the general community. In order to trace the development of this policy, we must resume the thread of the *political* history of the municipalities of England.

We find faint indications of it in several of Henry VIII.'s charters; as in one to Bristol in 1499, establishing a self-elective council of aldermen; who yet, though justices, had no exclusive power of municipal government. But the fierceness of religious dissension, which divided the whole nation at the close of the following reign, made the *management* of the House of Commons an object of primary importance to either Catholic or Protestant successor to the crown. This therefore was the era of the most active exercise of the prescriptively discretionary power of the sheriffs to determine within their several bailiwicks, in issuing their precepts for a general election, which of the municipal towns should, and which should not, be held to be parliamentary boroughs. To arbitrarily omit any of the larger towns, or even of the smaller ones, which in public estimation had a prescriptive right to be summoned, was too open an attack on the freedom of parliament to be now ventured upon. The calling of this right into action in boroughs wherein it had lain dormant from the beginning, or, though once exercised, had fallen into disuse from alleged poverty, decay, or other causes, was a more plausible course of proceeding; and notwithstanding the evident partiality with which it was conducted, was permitted to pass without legislative interference.

Accordingly we find in the reigns of Edward VI., Mary, and Elizabeth, besides seventeen boroughs *restored* to parliamentary existence, forty-six now first beginning to send members, making altogether an addition to the former representation (as no places were now *omitted*) of sixty-three places, returning 123 members. But the most important feature in this policy of the crown at this period—that which mainly contributed to attain the object of that policy—was its novel assumption of the right of remoulding, by *governing charters*, the municipal constitution of these new or revived parliamentary boroughs. Most of these charters expressly vested the local government, and sometimes the immediate election of the parliamentary representatives, in small councils, originally nominated by the crown, to be ever after self-elected.

This was the first great step on the part of the crown in undermining the political independence of the English municipalities. The successful working of the application of this novel principle to the new or restored parliamentary boroughs, encouraged the Stuarts not only to continue this system of

erecting close boroughs, but to make a second and a bolder advance in the same direction, by attacking the constitutions of the prescriptively parliamentary municipalities themselves. Already, in Michaelmas term, 40th and 41st of Elizabeth, the judges had given a remarkable decision, extremely favourable to the prosecution of this object. Attempts appear to have been then making in several of the boroughs to have popular elections of the principal officers, in opposition to a custom which had grown up of leaving the elections in the hands of the common councils. It was now, therefore, desired to be known whether such elections were legal, in opposition to the words of a charter vesting the elections indefinitely in the commonalty. It was on application by the Privy Council, that the two chief justices, the chief baron, and the other judges, determined that such custom was good, because the several boroughs had power to make bye-laws; and that where no bye-law making such regulation was to be found, it might nevertheless be presumed that such bye-law had existed, because such custom must have originated in common consent. And thus it was judicially decided, not only that elections of municipal officers by select common councils were legal, but that where such custom had grown up, the community at large were for ever excluded from such elections.

The incongruities involved in this decision, and the disregard of all constitutional principle, are very notable. That the plenitude of royal prerogative established at the Conquest should have excluded, for ages before, all appeal to the inherent right of freemen to a voice in the appointment of those who were to have the direction of their common affairs, is perfectly intelligible. That on the *royal charter*, and that alone, they constantly rested their title to such power of internal organization as they claimed to exercise, is sufficiently manifest. Here the burgesses and the royal judges should seem to have been meeting on common ground. The burgesses simply appealed against a vicious custom of later growth to the superior and anterior authority of their charter. The judges, instead of vindicating that authority, as it should have been the primary interest of the prerogative to do, asserted—first, that the power of making bye-laws, given by the charter, empowered the community to make a law contravening an express provision of the same charter; secondly, that there was a particular kind of bye-law, which, though the community had power to enact, they had no power to repeal; and thirdly, that in a certain case, the existence of an *express law* was to be *presumed* from a *usage* commencing within time of memory. This transaction, therefore, presents a most curious example of the compromising, by the crown itself, of the very principles on which the stability of the prerogative most firmly rested, in the eager pursuit of its immediate policy.

The judicial authority being thus once brought into play to decide, for the crown's own immediate convenience, upon the extent and durability of its powers in the granting of municipal charters, was kept in active operation throughout the Stuart reigns. In the twelfth year of James I. it proceeded so far as to declare that the king could, by his charter, incorporate the people of a town in the form of select classes and commonalty, and vest in the whole corporation the right of sending representatives to parliament, at the same time *restraining the exercise of that right to the select classes*; and such was thenceforward the form of all the corporations which royal charters created or remodelled. After this fashion it was that, under James I. and Charles I., seventeen more parliamentary boroughs were revived; and that James created four, making a total addition to the borough representation of forty-one members, besides the four members for the two English universities, which James first introduced.

That all these arts combined were insufficient to counteract in the representative house the popular spirit, and the spread of political knowledge consequent on the diffusion of printing, so far as to render that assembly thoroughly subservient to the views of the Court at that period, is a fact too notorious to be here enlarged upon. Charles I. attempted, and persevered in attempting, that which even Edward I. had found it expedient solemnly to forego—the levying of general taxes without consent of the Commons in parliament. This was the true commencement of the struggle. The narrative of the consequent events—of the necessity which drove him once more to have recourse to parliament—the necessity, not less urgent, which drove the Commons to

extort from him the act which prevented their being dissolved without their own consent—the distrust which eventually arose between the people and that House of Commons which so long continued in self-constituted permanency—and its final dissolution by force, to make way for the arbitrary modifications introduced by a military dictator—forms rather an episode in parliamentary history than a link in the chain of that history itself. The endeavours of the Protector to mould a House of Commons which should both second his political views and possess the confidence of the people proved abortive; although, by omitting the more considerable boroughs, proportioning the representation of the others to the population of the several places, and increasing that of the counties, he seems to have made a show at least of seeking to place the general representation on a basis more accordant with the relative numbers and importance of the several constituencies.

'A free parliament' was as much the national watchword in 1660 as it had been in 1640; and Charles II.'s *Arbitrary* claim would have availed him little without that parliament's declaration of it.

The thirteenth year of this reign is memorable for the enactment of the statute, commonly known as the Corporation Act, which so long operated to the exclusion both of Roman Catholics and of Dissenters from all corporate offices. It provides that 'no person or persons shall be placed, elected, or chosen, in or to any of the offices of mayor, aldermen, recorders, bailiffs, town clerks, common-councilmen, or other offices of magistracy, or place or trust, or other employment relating to or concerning the government of any city, corporation, borough, cinque port, or any of their members, or other port-town, within England, Wales, and Berwick-upon-Tweed, that shall not have, one year before such election or choice, taken the Sacrament of the Lord's Supper according to the rites of the Church of England.' But this legislative measure, which was dictated by the public opinion of the time, and so long operated to the exclusion of Roman Catholics as well as Dissenters from all municipal offices, was not at all conducive to the views of the Court. After lavishing every means at its disposal for the *management* of the House of Commons by the dispensing of bribes and pensions to individual members that Court, ever prodigal and ever needy, meditated at once a cheaper and more permanently effective process of ensuring parliamentary subserviency, by pushing to its furthest limit the old policy of remodelling municipal corporations. Even this was felt to be a bold attempt; but it was deemed less hazardous than the endeavour to reign without a parliament, in which Charles I. had failed.

As the proceedings now adopted against such of the governing charters of cities and boroughs as still sanctioned a too popular municipal constitution, was a general filing of what are technically termed informations in the nature of *quo warranto*, from the prominence of those words in the old Latin formula of the instrument itself, it is necessary that we should briefly explain the origin and use of that form of proceeding on the part of the legal advisers and officers of the crown.

Although many of the antient boroughs received their first Anglo-Norman charters of liberty from the successors of those military leaders who had received from the Conqueror the largest shares of the national spoil, yet the general relaxation of the feudal bonds at the same time that the relations of the boroughs with the crown became more determinate and regular, brought nearly all of them, at an early period, into immediate dependence, as the same boroughs were from the first, upon the validity of *royal charters* for the maintenance of their most important privileges. When some degree of regularity arose out of the judicial chaos necessarily introduced by such a conquest, the *justices itinerant* were empowered by the crown to inquire, in their circuit, *by what warrant* all who claimed any franchise in derogation of the crown, from which all local liberties were assumed to emanate, maintained their title. In the 18th year of Edward I. who laboured strenuously in various ways to infuse order and permanence into the internal administration of the realm, we find the following statute, the terms of which seem directed to an object quite contrary to that which in the use of the proceeding in question the crown so eagerly pursued at a later period.—'Concerning the writ that is called *quo warranto*, our lord the king, at the feast of Pentecost, in the eighteenth year of his reign, hath established, that

all those who claim to have quiet possession of any franchise before the time of King Richard, without interruption, and can show the same by a lawful inquest, shall well enjoy their possession; and in case that possession be demanded for cause reasonable, our lord the king shall confirm it by title. And those that have old charters of privileges shall have the said charters adjudged according to the tenor and form of them; and those that have lost their liberties since Easter last past by the aforesaid writ, according to the course of pleading in the same writ heretofore used, shall have restitution of their franchise lost, and from henceforth they shall have according to the nature of this present constitution.' The proceeding by *quo warranto*, however, had long been obsolete when the crown lawyers of Charles II. ventured to revive it on so extensive a scale. The selection of this mode of proceeding seems to have been as injudicious as the purpose of it was dishonest. 'The crown lawyers, more violent than learned,' observes Mr. Willcock, in the introduction to his 'Law of Municipal Corporations,' instead of first proceeding by *scire facias* to repeal the charters on pretence of forfeiture, which would have given the subsequent judgments at least the semblance of being conclusive, mistook their proceeding, and by flinging informations in the nature of *quo warranto* against all the obnoxious corporations, proceeded in such a manner that it was impossible to obtain even the appearance of a lawful judgment against them, since it could be sustained only upon two grounds: either that there were no such corporations ever established, and the bodies assuming to act as such were merely self-constituted; to which the charters and well-known usage throughout the land offered a manifest contradiction;—or that all the corporations had been dissolved for want of officers and members, and the persons assuming to act as such were all mere usurpers; to which the very form of the information offered a plain inconsistency, by admitting that the corporations of which they were accused as usurping the offices were still in existence. Ill-chosen and unjust as the measure was, judges were found^{*} vile enough for the royal purpose.' London, which in later times had usually taken the lead in asserting the political independence of the more important English municipalities, and the example of which, from this circumstance as well as from its superior wealth and power, had ever been so influential, was selected as the first object of attack. At this particular time it was in especial disfavour; for the king having, with a view to deprive the last parliament which he held of the encouragement which was derived from the vicinity of that powerful and independent city, summoned it to meet at *Oxford*, London not only re-elected the members which it had returned to the last parliament at Westminster, but voted them their thanks for their spirited conduct. Now, therefore, 'after the most learned advocates in the land had been heard on the proceedings against London, judgment was given of seizure of its franchise to be a corporation into the king's hands, as forfeited.' The determination of the information against the metropolis spread consternation through the kingdom, by the assistance of which and the intrigues of the court party, almost all the other municipalities were prevailed on either to suffer judgment against them by default, of which the crown made a use as erroneous as of the original proceeding, by treating it as a final and conclusive judgment, or to surrender their charters in hope of conciliating the despot's favour. Here, too, the crown lawyers mistook the law, or, confiding in the plenitude of arbitrary prerogative, thought its rules unworthy their consideration. New charters were granted without using the precaution to enrol many of the surrenders, on account of which they were wholly inoperative, even should we admit that a municipal corporation has power to surrender the franchise of being a corporation.

The labours of this prince were productive of no advantage to himself; for although the co-operation of his partisans, the servility of judges, and the verdicts of party juries, effected the subversion of the corporations and pronounced a parliament venal as the realm could produce, his alarm at any assembly which might pretend to represent the people, and be possibly influenced by their opinions, was so great, that he deferred the period of their convention until death undermined the system of contrivance which

with his management might have subverted the constitution. This system soon fell after it came under the management of a successor, against whom the whole nation was exasperated. The first and only parliament of James II. displayed the full influence of his brother's measures,—the effect of laying corporations under the control of the crown and vesting the election of their magistrates in the select classes; a parliament convened ready to forge chains for themselves and the nation,—a parliament whose servility needed only a little duplicity in the king to render him the most arbitrary sovereign in Europe.' This prince, 'after having tried in vain to avail himself of his brother's arrangements, endeavouring when too late to regain popular favour, abandoned them in despair, and issued a proclamation to restore corporations to their original state.

'Some availed themselves of this advantage and a more constitutional reign; but the select classes of corporations, unwilling to relinquish the influence they had acquired under the new constitutions of Charles, still retained in their grasp the municipal power, and by this means prevented the restoration of popular elections. It was a new case for the tribunals. The operation of the recent proceedings under the shadow of legal form, and of such surrenders and new incorporations, was not generally understood. Many of the former officers had died or removed from the municipalities, the new officers were of the royal party, and the aristocratic ascendancy was not easily overthrown. The doctrine of the case of corporations,' above cited, 'that by a bye-law the corporation at large might be divested of the elective vote, that it might by the same method be reposed in the select classes, and that modern usage was sufficient evidence of such a bye-law—in many instances continued the constitution of corporations in the form instituted by Charles, under pretext of lost bye-laws, after the charters were professedly abandoned.

'So dilatory and expensive was it for the freemen to vindicate their rights, so much were they under the private control of the members of the select classes, so easy was it by compromise with the more active individuals to defer the inquiry, and so unimportant did this franchise in some cases appear, that at the present day many corporations are not emancipated from the influence of these tyrannical proceedings. The struggle has been violent and expensive; the lapse of time had involved the question in new difficulties; and several important points on this part of the law were not settled until the decision of the case of Chester, in the House of Lords, after two trials in the country and one at bar.

'Since the abdication of King James, the government has abstained from open interference with the liberties of corporations; but they have been incessantly disturbed by the cabals of private parties, for the purpose of influencing the returns of members to parliament, the effect of which has been to bring them more frequently under the inspection of the Court of King's Bench, and to introduce a new system of legal proceedings for the investigation of their conduct. The ancient writ of Quo Warranto has long ago fallen into disuse. The information in the nature of a Quo Warranto has been moulded into a regular form of action by the statute of the ninth year of the reign of Anne, aided by that of the thirty-second of George the Third; and the determinations of the court. Proceedings on the Writ of Mandamus have also assumed a similar regularity through the liberal interpretation of the same statute of Queen Anne, and those of the eleventh and twelfth years of George the Third.'

'But although, since the reign of James II., no attempt has been made to recur to the Stuart measures against such of the corporations as still retained, in whole or in part, a popular constitution; yet, as the municipal corporation commissioners observe in their late report, 'the charters which have been granted since the Revolution are framed nearly on the model of those of the preceding era; they show a disregard of any settled or consistent plan for the improvement of municipal policy corresponding with the progress of society. The charters of George III. do not differ in this respect from those granted in the worst period of the history of these boroughs.'

Resuming the history of their parliamentary relations, we must observe that under Charles II. was made the latest addition to the town representation. In that reign, after repeated attempts, since the time of Henry VIII., made in the House of Commons, but defeated by the House of

* Pemberton, Chief Justice of the King's Bench, was removed to be Chief Justice of the Common Pleas; and Saunders, who had drawn the pleadings and advised on the part of the crown, was raised to be Chief Justice of the King's Bench just before the term in which the judgment was given.

Lords or the withholding of the royal assent, to procure it to be enacted that the palatine county of Durham, as well as that of Chester, should send representatives to the Commons' House, it was at length passed into an act, that the city of Durham, as well as the county, should thenceforth send two members; and two members were granted to Newark by *royal charter* in reward of its exertions for Charles I. during the civil war.

It may be remarked, that in the assembly which addressed the Prince of Orange to issue letters for a convention parliament, the city of London again figured very prominently; the mayor, aldermen, and fifty of the common council, being added to the invitation sent to all who had sat in any House of Commons during the reign of Charles II.

The last important modification in the exercise of the parliamentary franchise in cities and boroughs generally, enacted before the present era, was the provision of an act of the ninth year of Queen Anne, which disqualifies every person (except the eldest son of a peer or of a person qualified to be a knight of the shire) from becoming a member for a city, borough, or port, who is not possessed of a freehold or copyhold estate of 300*l.* annual value, clear of all incumbrances.

Both the Corporation Act, already specified, and the Test Act, which required every officer, civil or military, to receive the Lord's Supper according to the forms of the Established Church, and to make the declaration against transubstantiation, had for many years been comparatively imperative, when, in the year 1828, after their repeal had long been advocated by the liberal opposition in the House of Commons, it was made a government measure, and passed into an act. For some time previous the public opinion against the exclusion for religious opinions, perpetuated by these statutes, had so far preponderated, that it was usual, at the close of each session of parliament, to pass an act to indemnify such as had exercised office without complying with their requisitions.

This measure, and the more important one which speedily followed it, the complete political emancipation of the Roman Catholics, were passed without any direct view to the amelioration of the representative system. The revolution of 1688, as we have seen, though it restored a popular constitution to some of the municipalities which had most recently been deprived of it, removed none of the vices in the general system. The history of the long period between that event and the introduction of the bill for an extensive and systematic amelioration of the representative system, brought into the House of Commons by the ministers of the crown in 1831, is in a great measure the history of the transfer, from various causes, of the political influence over parliamentary boroughs from the hands of the crown, which, for its own purposes, had moulded and adapted them to be so influenced, to those of private proprietors and patrons, among whom were always many members of the House of Lords. Thus there arose a new and unprecedented parliamentary system. That command of a majority of borough votes in the House of Commons, which even the later Stuarts had wanted means to realize, was obtained in the course of the last century, through the vastly augmented amount of government patronage arising from the great increase of the army, navy, colonial, and all other public departments, the establishment and rapid growth of the customs and excise, &c., &c. That, we say, which the Stuart government could not compass by the distribution of *money*, later administrations were enabled to accomplish by the distribution of *place*. The trafficking in the close boroughs, or as they were more popularly termed, the *rotten boroughs*—that is, the purchasing the power of directly influencing the election of, or absolutely nominating their members,—became, to use the well-known words of a minister, delivered in the Commons' House itself, 'as notorious as the sun at noon-day,' and for a long and eventful period was almost as little the subject of animadversion with any considerable portion of the public.

It belongs to the general history of the House of Commons, to trace in detail the progress of the great question of 'parliamentary reform,' as the desired amelioration of the representative house of parliament was so long designated. [COMMONS, HOUSE OF.]

We now come to consider the operation of the great change in the political relations of the cities and boroughs, in bringing about the change in their municipal constitu-

tions. In following the new order of movements which received its first impulse in the Reform Act, we may already trace a progress the reverse of that which had been going on for centuries before. As the vitiation of the municipal constitutions of the towns had been requisite to prepare the way for their political prostration,—so their political emancipation to so large an extent opened the way towards their municipal regeneration. The means which the wielders of *prerogative* have at all times deemed necessary to the attainment of their *political* ends, inevitably became a source of *local* evil in the several municipalities. The new organization of the representative system immediately operated in various ways to force the state of the municipal system into consideration. In the first place, the extinction of the most extremely insignificant or decayed parliamentary boroughs under that Act,—the extension of the boundaries of other boroughs, in a measure corresponding with the growth of the places beyond their ancient limits,—the enfranchising of the great modern towns,—and above all, the vesting of the franchise substantially in the inhabitant householders,—all combined to exhibit in strong relief the great defects of the yet standing corporation system. The almost superstitious reverence for the mysterious character attributed to *corporations*—a reverence which the mystic language of crown lawyers respecting them had constantly been cherishing—was now utterly dissolved; and men were in a condition to place coolly side by side in their contemplation the proper and legitimate *ends* of town government itself, and the character of the associated bodies which asserted an imprescriptible right to act as the only *instruments* for attaining those ends.

One singular result of the *mystery* which, for purposes which we have already sufficiently indicated, had been thrown about the being and end of a *corporation*, now became distinctly apparent. So little, it should seem, had it been understood that good local government should be the primary object of this body's existence, that in the local acts of parliament which in latter times have been passed for the improvement of nearly all the more considerable towns, the superintendence of the police, and the powers necessary for watching, paving, lighting, cleansing, and supplying the towns with water, instead of being intrusted to the municipal authorities, had for the most part been committed to various distinct and independent bodies,—although none of these towns were too extensive to be embraced by one system of municipal government;—not indeed that the inhabitants in any case desired that their municipal authorities should exercise these new powers; for although they had not yet discovered what was or should be the use of a municipal corporation, they were convinced that in the great majority of instances, constituted as it then was, it was not an engine working to the production of their local well-being.

It is the less wonderful that the inhabitants of corporate towns should have come to this conclusion, when we find, as appeared in the recent inquiry, that few corporations admitted any positive obligation to spend the surplus of their income for objects of public advantage. They regarded such expenditure as a spontaneous act of private generosity, rather than a well-considered application of the public revenue; and the credit to which the corporation, in such a case, generally considered itself entitled, was not that of judicious *administrators*, but of liberal *benefactors*. From this rooted opinion that the corporate property was held in trust for the corporate body only, distinct from the community with which it was locally connected, the transition was not unnatural to the opinion that individual corporations might justifiably derive a personal advantage from that property; and accordingly we find that at Cambridge the practice of turning the corporation property to the profit of individuals was avowed and defended before the municipal commissioners by a member of the common council.

The operation of the parliamentary Reform Act upon the local affairs of those boroughs in particular which it wholly disfranchised, and of others in which it destroyed the exclusive influence, afforded additional illustration at least as to what was *not* the use of a municipal corporation on the old principle. In many of these the revenues were inadequate to the wants of the municipality, and the deficiency had been supplied either from the funds of the patron or by the members for the borough. In some, before the passing of the Reform Act, the members or the patron paid all the municipal expenses; but since that epoch these

contributions had ceased, and such corporations had no longer the means of maintaining municipal institutions of any kind. In the case of Grampond, the mayor had left the borough upon its disfranchisement, and the corporation books and accounts had not been found since; nor had any new mayor been elected until the year in which the late commission of municipal inquiry issued.

In compliance with an address of the House of Commons, this royal commission to 'inquire as to the existing state of the municipal corporations in England and Wales, and to collect information respecting the defects in their constitution; and to make inquiry also into their jurisdictions and powers, and the administration of justice, and in all other respects; and also into the mode of electing and appointing the members and officers of such corporations, and into the privileges of the freemen and other members thereof, and into the nature and management of the income, revenues, and funds of the said corporations, and into the several local jurisdictions existing within the limits of England and Wales,' was issued in July, 1833; and the general report of the commissioners was laid before the king, and before the House of Commons, who ordered it to be printed, in March, 1835. On this general report, with the particular reports upon the several places appended to it, was founded the ministerial bill 'for the regulation of municipal corporations in England and Wales.'

The total number of municipal corporations in England and Wales was found by the commissioners to be 246. A certain number of these, the most inconsiderable in size and population, being left for future legislation, and London, the greatest and most complicated of all, with its many wealthy trading companies, each an important corporation, being reserved as the subject of a distinct bill not yet brought before parliament, the total number of the cities, towns, and ports, reconstituted, under the general name of 'boroughs,' by the Municipal Reform Act, is 178. The act arranges these in two schedules, each divided into two sections. The first schedule (A) comprises those boroughs which are positively to have a commission of the peace. Their number is 128, and includes all those whose population is large enough to admit of their division into two or more wards, as also a certain number of those which are not to be so divided; the members of their respective councils to be elected under the act vary, according to the population, from 4 aldermen and 12 councillors, which is the number for Aberystwith, Abingdon, Anevior, &c., and is the lowest number allotted by the Act, up to 16 aldermen and 48 councillors, the highest number fixed by the Act, and assigned only to Bristol, Leeds, Liverpool, and Norwich. This schedule is arranged in two sections; the first comprises those boroughs, 84 in number, the enlarged parliamentary limits of which, as settled by the Boundary Act accompanying the Parliamentary Reform Act for England and Wales, are to be taken as the municipal limits until altered by act of parliament. These, of course, are all parliamentary boroughs as well as municipal. They are:—

Aberystwith, Abingdon, Barnstaple, Bath, Bedford, Berwick-upon-Tweed, Bridgewater, Bridport, Bristol, Bury St. Edmunds, Cambridge, Canterbury, Cardiff, Carlisle, Carmarthen, Carnarvon, Chester, Chichester, Colchester, Dartmouth, Denbigh, Derby, Devizes, Dorchester, Dover, Durham, Evesham, Gateshead, Gloucester, Guildford, Harwich, Haverford-west, Hereford, Hertford, Ipswich, Kendal, Kidderminster, Kingston-upon-Hull, King's Lynn, Leeds, Leicester, Leominster, Lichfield, Liverpool, Macclesfield, Monmouth, Neath, Newark, Newcastle-under-Lyne, Newcastle-upon-Tyne, Newport (Monmouthshire), Newport (Isle of Wight), Northampton, Norwich, Nottingham, Oxford, Pembroke, Poole, Portsmouth, Preston, Reading, Ripon, Rochester, St. Albans, New Sarum (Salisbury), Scarborough, Shrewsbury, Southampton, Stafford, Stamford, Stockport, Sudbury, Sunderland, Swansea, Tiverton, Truro, Warwick, Wells, Weymouth and Melcombe Regis, Wigan, Winchester, Windsor, Worcester, Great Yarmouth.

The second section of this schedule contains those boroughs, in number 44, the municipal limits of which are to remain as before the passing of this Act, until altered by act of parliament. Of these 29 are also parliamentary; viz.

Anevior, Banbury, Beverley, Bowdley, Boston, Brecon, Bridgenorth, Clitheroe, Coventry, Exeter, Falmouth, Grantham, Grimsby, Hastings, Lancaster, Lincoln, Liskard, Ludlow, Maidstone, Maldon, Plymouth, Pontefract, Rich-

mond, St. Ives, Tewkesbury, Walsall, Welchpoole, Wenlock, York.

And 15 are municipal only:—

Bideford, Chesterfield, Congleton, Deal, Doncaster, Gravesend, Kingston-upon-Thames, Louth, Newbury, Oswestry, Penzance, Romsey, Saffron Walden, Stockton, Wisbech.

The second schedule (B) comprises that portion of the boroughs of the smallest class not divided into wards, and having only 4 aldermen and 12 councillors, which are not to have a commission of the peace, except upon petition of their council and grant by the crown. This schedule, too, is divided into two sections, after the same manner as the former. The first section comprises those parliamentary boroughs whose parliamentary boundary is to be taken until further legislated upon, in number 9:—

Arundel, Beaumaris, Cardigan, Llanidloes, Pwllhel, Ruthin, Tenby, Thetford, Totnes.

Of the 41 contained in the second section of this schedule, whose municipal limits are to remain as before the Act until altered by parliament, 23 are also parliamentary:—

Bodmin, Buckingham, Calne, Chippenham, Droitwich, Eye, Flint, Helstone, Huntingdon, Hythe, Iauceston Lyme Regis, Lymington, Marlborough, Morpeth, Penryn, East Retford, Rye, Sandwich, Shaftesbury, Tamworth, Wallingford, Chipping Wycombe.

And 18 are municipal only:—

Basingstoke, Beccles, Blandford Forum, Chard, Chipping Norton, Daventry, Faversham, Folkestone, Glastonbury, Godalming, Godmanchester, Llandovery, Maidenhead, South Molton, South Wold, Stratford-on-Avon, Tenterden, Torrington.

The fixing of the new municipal boundaries is the task of a distinct commission, which has been actively at work since the passing of the act. Anciently there was no distinction between municipal and parliamentary limits, because it was *by virtue of its being a municipal town* that each borough sent representatives. But in fixing the new parliamentary limits under the Reform Act, regard was had to various circumstances, which, in many instances, occasioned the tracing of a boundary much too wide to serve conveniently as the limit of a borough inhabitancy. In many cases however it is probable that the boundaries will remain as already indicated in the schedules affixed to the Act, especially in those larger parliamentary boroughs whose great amount of population made it least necessary, in settling their limits, to describe a circuit extending far beyond the more densely inhabited space.

Besides the general inadequacy at the present day of the ancient borough limits in the more populous towns, there were two other classes of anomalies in the old system, in relation to this matter, which it is of some importance to notice. The first was, that in some cases, as at Grantham and Brecon, the corporate boundary was not continuous, but included outlying parcels of ground. The most remarkable instances of this occur in the Cinque Ports. At Hastings, for instance, the corporate magistrates had authority, amongst other places, over two detached precincts distant from that town forty and fifty miles respectively. And the town of Ramsgate, as well as the corporate town of Deal, both at some distance from Sandwich, were under the jurisdiction of the corporation of the latter town. The second class of these anomalies consisted in the precincts being often locally situated within the limits of the corporate authority, but exempted from its jurisdiction. Such existed at York, Lincoln, Norwich, Winchester, and Chichester. These had usually originated in ecclesiastical privileges, or had been the site of the castle of the lord of the borough. In the city of Canterbury there were fifteen such precincts, though some of them were in dispute between the county of Kent and the county of the city.

The Municipal Reform Act removes both the above descriptions of inconveniences. In each borough *every* place included within the general boundary indicated in the schedules is to form part of that borough; but any place hitherto forming part of a city or borough, but not included within the boundary thus indicated, is henceforward to be held as part of the county within which it is locally situated, and not as part of the borough.

In analyzing the change made by the act in the *internal constitution* of the boroughs, we find that the facts naturally resolve themselves into three divisions. The first and most important consists of those relating to the constitution

of the electoral body; the second division regards its organization for the purposes of local legislation, taxation, and the other branches of public economy, as the administration of public property, whether absolute or in trust; the appointment, surveillance, and payment of magistrates, officers of justice, police, and other departments; the maintenance of public works and buildings; the paving, lighting, and cleansing of the town; the maintaining and improvement of thoroughfares, and supply of water. The third division regards the organization for purposes of local judicature, comprising all that relates to the constitution and powers of the local courts and magistracies.

To make the municipal change now effecting distinctly intelligible, we shall compare, under each of these heads, the state of the municipalities previous to the late Act, with the several provisions of the Act itself.

I.—MUNICIPAL ORGANIZATION.

1. Electoral Body or Local Constituency.

Most of the governing charters incorporated the men and inhabitants of the borough; yet, though very few of them unequivocally designated the corporate body as a small and definite number of persons, custom (supported by the silence of the charters as to any general right to the franchise, and by its disuse and oblivion where any such might formerly have existed) had in many places practically established the same restricted constitution. A very numerous class of corporations existed which might be considered as occupying a middle place between those in which the number of corporators was indefinite and those in which it was now treated as necessarily definite: this class consisted of the corporations in which, although there is no doubt, both from the wording of the charters and the modern practice, that the number of corporators might be indefinite, it had been the policy of the ruling body to restrict the number, so as to retain all the privileges constitutionally belonging to a large and indefinite body in the hands of a small one. In a great proportion of the instances in which the number of corporators was, both in constitution and fact, large and indefinite, the freemen had no share in the management of the corporation affairs: this prevailed to so great an extent, that in such corporations the municipal commissioners often found that the *freemen* had long ceased to consider themselves as a part of the *corporation*; which term, in popular language, was applied exclusively to the *ruling body*. In some places this notion had been further refined upon, and a distinction drawn in the large indefinite body of corporators, between those elected by the ruling body and those claiming by an independent right, the former class alone being treated as forming an integral part of the corporation.

In those boroughs where the number of corporators was definite, or had always been kept small, the principal mode of entering the corporation was by nomination of the ruling body. In some cases, the election must be from among persons qualified, the most usual qualification being residence in the borough; in others the choice was unfettered by any conditions. This mode of acquiring the freedom was usually said to be by gift or purchase; and in fact, a sum of money varying with the circumstances of the corporation and supposed value of the franchise, was usually paid by each corporator on his election. In the boroughs where, both by charter and in practice, the number of corporators was unlimited, the circumstances under which the freedom might be demanded of right were very various; but almost all might be classed under the general titles of freedom by birth, by marriage, and by servitude. In a few places the possession or occupation of property gave a title to the freedom. Everywhere, a very few places only excepted, a distinction was made between the freemen and the inhabitants. The right of conferring the freedom by sale or free gift was claimed and exercised by the ruling body of almost every corporation. Particular officers of the corporation, usually the mayor, were frequently allowed to name a certain number of persons to be admitted to the freedom; but although this practice had nearly acquired the force of positive law, it is not distinguishable in its origin from the general power exercised by the ruling body, who seem in these instances to have simply acquiesced in their officers' nomination.

In many towns, as still in London, it was necessary, in order to complete his title, that the party should be first

admitted a member of certain guilds or trading companies of ancient institution within the borough, and still preserving various degrees of connexion with, and subordination to the municipal corporation; a practice which seems to have been formerly still more prevalent. The derivative title conferring a right of admission to these guilds was usually of the same kind as that by which the municipal corporation itself was entered. These guilds were also accustomed to admit by purchase; but such purchasers neither acquired nor could convey any absolute right to admission into the municipal corporation. Occasionally, an incorporated guild has continued to exist after its connexion with the municipal corporation has been almost or wholly dissolved.

The titles from birth, marriage, and apprenticeship, were very various in different places. In some, the right by birth was enjoyed only by the children of freemen born within the borough; in others, by children of freemen wherever born; in some, the father's admission at any time conferred the inchoate right on all his children wherever born; in others, only on those born after, and in many, only on the first son born after his admission. Less variety is found in the nature of the title which a freeman's daughter or widow must possess, to enable her to exercise the privilege. The right by apprenticeship has usually accrued by service under indentures for seven years to a freeman within the borough: service at sea has generally been considered in the light of service within the borough where the vessel belonged to its port: in some boroughs having trading companies, the binding and service must be to one of the company in the trade peculiar to that company.

Defects of late system.—The capital defect was that the corporate bodies existed independently of the communities in which they were. In most of them, the right to the freedom, or citizenship, or burghership, had been restricted to a much smaller class than that which formerly possessed it. 'Without inquiring,' say the municipal commissioners, 'when corporations in this country assumed their present form, it may be safely asserted that the body, however named, which was originally intended to share, and which in fact did share, in the rights which the early charters conferred, embraced the great mass of the householders or inhabitants. By degrees, exclusive qualifications were insisted on with increasing strictness, and with new exceptions, as the privileges to which these exclusive bodies had claim rose in importance. Thus importance again was enhanced by the narrowing of the access to the privilege, and the consequent diminution of the number of individuals sharing in its advantages.'

Accordingly in most places all identity of interest between the corporation and the inhabitants had disappeared. This was the case even where the corporation included a large body of inhabitant freemen. It appeared in a more striking degree as the powers of the corporation became restricted to smaller proportions of the resident population, and still more glaringly when the local privileges had been conferred on non-resident freemen to the exclusion of 'the inhabitants to whom,' say the commissioners, 'they rightfully ought to belong.' Some corporations, indeed, were occasionally spoken of as exercising their privileges through a popular body; but in the widest sense in which the term popular body was applied to corporate towns, it designated only the whole body of freemen; and in most towns the freemen were a small number compared with the respectable inhabitants interested in their municipal government, and possessing every qualification, except a legal one, to take part in it. In Plymouth, for instance, where the population, including Devonport, exceeded 75,000, the number of freemen was only 437, of whom 145 were non-resident. In Norwich, the great majority of inhabitant householders and rate-payers were excluded from the corporate body: widows, paupers, lodgers, and others, paying neither rates nor taxes, were admitted to the functions of freemen, and formed a considerable part of the corporation. The case of Ipswich affords another remarkable illustration. Out of more than 20,000 inhabitants, the resident freemen formed about a fifty-fifth part. Of these more than one-third were un-rated; and of those who were rated many were excused payment. About one-ninth of the whole were paupers. More than 11-12ths of all the property assessed in the borough belonged to those excluded from the corporation. Of the inhabitants taxed under a local act for municipal purposes, less than 1-15th were freemen; and of the assessed taxes paid in the borough less than 1-20th was paid

by the whole corporate body. The condition of these freemen exposed them to bribery and undue influence, and advantage was taken of that condition to establish the most demoralizing practices. A further illustration of the vast disproportion existing under the old system between the actual basis of constituency and that which the inhabitancy would have suggested, appears in a table given in the commissioners' Report, of sixteen of the largest English cities and boroughs, which, with a collective population of 715,702 within their parliamentary boundaries, had only 34,697 freemen of all classes, resident and non-resident.

The political importance which the election of members of parliament has in later times conferred upon these governing bodies, and the rewards for political services thus brought within the reach of the ruling corporators, had caused the exercise of the parliamentary franchise to be often regarded as the sole purpose of a municipal institution; and in some boroughs this right has even survived all other traces of municipal authority. The custom of keeping the corporators as few as possible is referable rather to this cause than to the mere desire of monopolizing the municipal authority, which has been coveted almost exclusively as the means of securing the other and more highly prized privilege. Hence a great number of corporations have been preserved solely as political engines, the respective towns deriving no benefit, but often much injury, from their existence. 'To maintain the political ascendancy of a party,' say the commissioners, 'or the political influence of a family, has been the one end and object for which the powers intrusted to a numerous class of these bodies have been exercised.' The most flagrant abuses arose from this perversion of municipal privileges to political ends. The commissioners generally found that those corporations which had not possessed the parliamentary franchise, had most faithfully performed the duties of town government, and had consequently acquired more than others the confidence and good-will of the communities to which they were attached. Such was found to be the case in some where the ruling body was strictly self-elected, and the general constitution liable to the same objections as the great majority of corporations.

It was likewise with a view to the lucrative exercise of the elective franchise that admission into the corporate body was commonly sought. In those towns where a large body of freemen returned the members, the years in which elections happened, or immediately preceding those in which they were expected, have been marked by the admission of a number greatly exceeding the average. Maldon and Bristol present two remarkable instances: at the former, in one election year, 1870 freemen were admitted, the annual average since then being only 17; at the latter, in another election year, 1720 were admitted in lieu of the annual average of 50. The number of admissions, since the Reform Act abolished the exclusiveness of the freemen's right of parliamentary election, had remarkably fallen off; and the corporate officers, in the course of the recent inquiry, expressed their conviction that the revenue from admission fees would thenceforward diminish, and in some places entirely fail.

The election to municipal offices, too, has often been a trial of strength between political parties; and instances of systematic bribery to secure such elections, appear at Maidstone, Norwich, Ipswich, Liverpool, Oxford, Hull, &c. Thus have the inhabitants had to complain, not only that the choice of their magistrates and their municipal functionaries was made by an inferior class of themselves, or by persons unconnected with the town, but also of the disgraceful practices by which the magisterial office was frequently attained; while those who, by character, residence, and property, were best qualified to direct its municipal affairs, were excluded from any share either in the management or the elections.

Another great source, in the late system, of unfair and injurious limitation of the municipal franchise, must not be overlooked. The Test and Corporation Acts, until their repeal not many years ago, excluded from the corporate bodies the whole mass of English Roman Catholics and dissenters. Against the latter especially, whose numerical proportion to the whole population of the kingdom has in later times so rapidly increased, the operation of those acts was most seriously prejudicial to the public welfare; and since their repeal the measure has been found to have little practical effect, owing to the self-elective constitution of the

old ruling bodies, still leaving in their hands an arbitrary power of admission or exclusion.

Changes introduced into the local constituencies by the Municipal Reform Act for England and Wales.—The most important change is the recognition and adoption of the two great principles upon which alone a municipal establishment can be usefully based;—first, that the *primary* object of such an establishment should be the welfare of the residents within the municipality;—secondly, and consequently, that the constituency should comprise *all* those, and *only* those, who contribute to the local burdens and are liable to the local services. A termination is thus put to that mischievous power so long exercised by the general government of the country, and by individuals holding political patronage, in modifying, enlarging, or restricting the nominal constituencies of so large a portion of the English municipalities, for the promotion of political or private objects exclusively, to the total disregard, and often in open contempt, of the well-being of the communities which they professed to regulate.

The Act provides, that every male person of full age, not an alien, who, on the last day of August in any year, shall have occupied any house, warehouse, counting-house, or shop, within any borough during that year and the whole of the two years preceding, and during that period shall have been an inhabitant householder within such borough or within seven miles of it by the nearest route, shall be a burgess of that borough, if duly enrolled in that year as below stated. But to be entitled to this enrolment he must have been rated to the relief of the poor, during such time of occupancy, for his premises within the borough, and must have paid, on or before the last day of August in that year, all poor-rates and all borough-rates (if any) under this Act, payable by him in respect of such premises, except such as become payable within six calendar months before the said last day of August. It is not necessary that, during the period in question, he should have continued to occupy the *same* premises. Any person occupying as above stated may claim to be rated to the relief of the poor, whether the landlord of the premises be liable to be so rated or not. And upon his so claiming, and paying or tendering the amount of the rate last payable, the overseers are bound to put his name upon the rate; and if they omit to do so, he is still to be deemed to be rated from the period of making such rate. And where any such premises shall come to any person by descent, marriage, marriage settlement, devise, or promotion to any benefice or office, he will be entitled to reckon the occupancy and rating of the former possessor as his own, and to add it to his own period of occupancy for the purpose of enrolment as a burgess. No person may be so enrolled who within twelve months before the last day of August in any year shall have received parochial relief or other alms, or any pension or charitable allowance from any fund held by trustees in the borough; but neither charitable medical or surgical aid given by trustees of the borough, nor the education of a child in any public or endowed school, is to disqualify for enrolment.

On the 5th of September in every year, the overseers of the poor of each parish or township, wholly or partly within any borough, are to make out an alphabetical list, to be called 'The Burgess List,' of all persons who shall be entitled, by the qualification above stated, to be enrolled in the burgess-roll of that year in respect of property within such parish, &c.; inserting therein the Christian name and surname of each person at full length, the nature of the property rated, and the street, lane, or other place in the parish or township where the property is situated. The overseers are to sign these lists, and deliver them to the town-clerk of the borough (appointed as hereafter stated), or to the person acting in his stead, on the said 5th of September, and to keep a true copy of them to be perused by any person, without payment of any fee, at all reasonable hours between the 5th and 15th of September; and the town-clerk is to have copies of all the lists printed, for sale to any person, at a reasonable price per copy, and to have a copy fixed in a public situation within the borough, on every day during the week preceding the 15th of September.

Every person whose name shall have been omitted in the list, and who shall claim to have it inserted, must give notice in writing to the town-clerk or his deputy, on or before the 15th of September, describing the nature, period, parish or other place of his occupancy and rating, and subscribed with his name and place of abode.

The burgess-lists, when revised by the mayor and two assessors (elected as hereafter described), and signed (as provided for in the Act), are to be delivered by the mayor to the town-clerk, who is to keep them, and cause them to be accurately copied into one general alphabetical list, in a book provided by him for that purpose, with every name numbered in regular series. If any burgess be rated for distinct premises in more wards than one, he will be entitled to be enrolled and to vote in such ward as he shall select, but not in more than one. And for the better ascertaining who are the burgesses of any ward, the town-clerk of any borough divided into wards is to cause the burgess-roll to be made out in alphabetical lists of the burgesses, to be called 'Ward Lists.' The books are to be completed on or before the 22nd of October in every year; and the town-clerk, at the expiration of his office, must deliver them, together with the lists, to his successor. Every such book into which the burgess-lists have been copied, is to be the burgess-roll of the burgesses of the borough entitled to vote in any election of councillors, assessors, or auditors of the borough that may take place between the 1st of November inclusive in the year in which such burgess-roll shall have been made, and the 1st of November in the following year. The admission, registry, and enrolment of burgesses are to be free from stamp-duty, which, in a large proportion of cases, formed, under the old system, the heaviest part of the expense of admissions to borough freedom.

The town-clerk is also to cause copies of the burgess-roll in every year to be written or printed, and is to dispose of them to all persons applying for copies, at a reasonable price for each. The proceeds of the sale of these, of the overseers' lists, and of the lists of claims and objections, are to be paid to the treasurer of the borough on account of the borough fund, out of which the expenses of their preparation are to be defrayed; and the council are to reimburse to the overseers of the poor, out of the borough fund, all reasonable expenses incurred by them in relation to the burgess-lists.

The reader may refer to the Act itself, or to the abstract in the 'Companion to the Almanac for 1836,' for many of the details of this and other parts of the Act, which it would be unnecessary to insert here.

II.—ORGANIZATION FOR LOCAL GOVERNMENT.

This part of our subject involves the consideration of three distinct though closely relative departments, the *legislative*, the *executive*, and the *ministerial*.

1. *Constitution, Designation, and Powers of the Legislative Body.*

Under the late system the legislative body generally consisted of a single select assembly called the *common council*, presided over by the executive officer of the municipality; though in some boroughs, as Ipswich, Carmarthen, and Berwick-upon-Tweed, it consisted of the freemen at large. The body of the council however was often composed of two classes, the superior class being generally designated as *aldermen*, the inferior simply as *common councillors*. In many places the aldermen, or those of analogous station in the corporation, had real municipal powers beyond those of the other members of the council; in others the distinction was merely honorary; in a few there were more than two classes in the common council: in many, the presence of a majority of each class of the common council was necessary to constitute it a legal assembly, the instances being rare in which the aldermen met also by themselves as a separate deliberative chamber; although in some, as at Hull and Pontefract, the executive officer and the aldermen, or analogous functionaries, constituted the whole council. The *recorder*, a legal officer, was occasionally constituted by charter a member of the common council; and in some towns other corporate officers were members of it *ex officio*. The same form of legislation, by a mayor and common council, had been preserved in the corporations whose number was definite, and in those in which the number, though indefinite, had been purposely kept low: in the former case, the common council generally comprised the whole corporation, and in the latter nearly the whole.

The members of the council were elected, in the great majority of instances, by the council itself, or by that division of it commonly designated as aldermen. In some cases

they were nominated by the executive municipal officer usually termed *mayor*. The election was generally for life: the qualification of residence, though sometimes necessary, was often little regarded. The aldermen generally filled up vacancies in their own body from the other branch of the common council; in other cases their class consisted of all who had filled the executive office: the aldermen, like the common councillors, were usually chosen for life. London and Norwich afford instances of the election, by large bodies of freemen, both of aldermen and common council, the latter in both cities being chosen annually.

The *functions* of the governing councils, which the original charters of most boroughs must be considered as having sanctioned rather than created, might be classed under four distinct heads—the appointment of officers, the making of *bye-laws* or local regulations, the levying of the various denominations of *rates* or local taxes, and the management of the corporate property and revenues. In a great number of corporations however the power of making bye-laws had long fallen into disuse. In some cases they were offered for approval or confirmation to a more popular assembly; and some charters required them to be approved by the judges of assize. Many corporations had the power of enforcing their bye-laws by fine and imprisonment, but these powers had of late been little exercised. In scarcely any instance have the members of the council, as such, legally received any salary or emolument. In London decided allowances are made for regular attendance on the committees, in which the great mass of business is prepared for the consideration of the common council.

The acknowledged defects in the late legislative constitution of the English boroughs bear a close affinity to those above indicated in the composition of the general constituency. As the commissioners remark, the exclusive and party spirit which belonged to the whole corporate body, appeared still more strikingly in the councils by which, in most cases, it was governed. It has been stated that the members of these councils were usually self-elected and for life. They were commonly of one political party, and their proceedings were usually directed to secure and perpetuate that party's ascendancy. Individuals of adverse political opinions were, in most cases, systematically excluded from the legislative council. Since the repeal of the Corporation and Test Acts, and the removal of the civil disabilities of the Roman Catholics, we find very few instances in which either Catholics or Dissenters, though often forming a numerous, respectable, and wealthy portion of the inhabitants, have been chosen into the governing body. These councils, embodying the opinions of a single party, were intrusted with the nomination of magistrates, of the civil and criminal judges, frequently of the superintendents of police, and were, or ought to have been, the leaders in every measure that concerned the welfare of their town; yet, so far from being the representatives either of its population or its property, they did not even represent the privileged class of freemen: and being elected for life, their proceedings were unchecked by any consciousness of responsibility. The discharge of their functions was rendered difficult by the dislike and suspicion which the mode of their election inevitably entailed upon them. Hence also the carelessness often observable in the performance of their duties; while persons well qualified for the council were excluded, sometimes for want of vacancies, sometimes through rejection by the electing body, sometimes through their own refusal to identify themselves with a system of which they disapproved. The common council of London is cited by the commissioners as a striking exception to the system of self-election for life, and a remarkable instance of the absence of the consequent evils. Again, it has been part of the general system of close corporation that all their affairs should be managed with the strictest secrecy, sometimes even enforced by oaths administered to the members of the common council. The inhabitants subject to their authority had often very imperfect information as to its nature and extent; knew not whether it flowed from prescription, from charters, or from bye-laws, and had no means of ascertaining it but the troublesome and expensive one of applying to the superior courts for a writ of *mandamus* or *quo warranto*. The bye-laws made or repealed were seldom published, and the public generally learned the provisions only from common rumour. This ignorance was sometimes shared by the members of the corporation itself, so that both charters and bye-laws were frequently violated with impunity.

2. Constitution, Designation, and Powers of the Executive Office.

The executive officer of the municipality, or 'head of the corporation,' as he has commonly been called, has, in all instances, been constituted by annual election. In a very few corporations of indefinite number, as at *Rerwick-upon-Tweed* and *Ipawich*, the freemen at large had an unrestricted power of choosing any one from their own number. In some, they chose him from the aldermen or the common councilmen; in others, from two or more nominated by the governing body. Most commonly, the court of aldermen or common council elected him from the aldermen or common councilmen. In some places, he was presented by the jurors of the court leet. In several, the same person was re-eligible only after a given interval. In a great majority of the English and Welsh boroughs, the executive officer bore the Anglo-Norman designation of *mayor*; in a few, that of *bailiff*; and occasionally, but rarely, the old Saxon title of *portreva*. Some of the governing charters gave him the power of appointing a deputy.

The head of the corporation, besides presiding over the governing council and acting as its executive organ, has universally been, by virtue of his office, the head of the local judicature also. He commonly received a salary: in some small boroughs he has taken the whole corporate revenue without account; but more usually a fixed sum has been paid him, besides tolls, which have often been collected exclusively in his name and on his behalf. Having been generally expected to exercise hospitality towards the other members of the corporation, and distinguished visitors of the town, it is probable that, on the whole, more has been expended in this way than has been realized from the ordinary emoluments of the office. In some boroughs no emolument whatever has been attached to it.

In some cases, the duties of the mayor have been wholly neglected, either from want of capacity or of will; occasionally from non-residence. In some boroughs the same mayor was continued from year to year; and in others it was customary to elect two or three individuals in rotation. The effect of entrusting his election to the freemen, constituted as their body has generally been, was to degrade the office in the estimation of the persons to be governed. The charters usually limit the executive officer's power of appointing a deputy to occasions of his illness or necessary absence, plainly importing that residence in the town was an implied condition of his holding such office. But although the mayor was usually resident, the practice of deviating from the charter by appointing a deputy for the whole year had become general.

Changes made by the Municipal Reform Act in the Constitution, Designation, and Powers of the Legislative Body.

It is here that the House of Peers in its legislative capacity has most decidedly and importantly interposed. Leaving the constituency on the broad basis fixed for it by the first bill sent up from the Commons, that is, on the rate-paying qualification, more extensive than the 10*l.* suffrage of the parliamentary constituencies, it proceeded to re-model the simple constitution which the Commons had fixed for the governing councils. They had enacted that for the future each municipal body should be styled simply 'The mayor and burgesses' of such or such a borough, and the constitution of each was to be purely popular; the governing council, consisting of one class only, to be chosen one-third yearly by the burgesses at large, and subject to no qualification of property. But the Lords have introduced a distinct class of aldermen elected for a term of years, so that the future style of every corporate body is to be 'The mayor, aldermen, and burgesses of the borough of ———,' and they have also made high pecuniary qualifications requisite for the holding of any municipal office, even as a member of the council or local representative assembly.

The governing council then, or local legislature of each borough, is to consist of a mayor, aldermen, and councillors, and to be called 'the council of the borough.'

The number of councillors to be elected for each ward in boroughs so divided is to be fixed by the revising barristers who determine the limits of the wards; and who are, in assigning the proportions, to have regard to the number of persons rated, and the amount of the poor-rates paid in each respectively. The number of councillors in each ward is to

be a number divisible by *three* (as one-third quit office every year), and the particulars of the number assigned to each ward are to be submitted to the king in council, and published in the 'London Gazette,' and a copy is to be deposited with the town-clerk of the borough.

The councillors are to be elected by the burgesses who have been duly enrolled in each borough, and in boroughs divided into wards the councillors for each ward are to be elected by the burgesses of that ward only; and should the same person be elected councillor for more than one ward at the same election, he must make choice of *one* within three days, or in default the mayor is to name the ward for which he shall serve. One-third of the number is to go out of office every year, and an annual election of one third of the whole number of councillors is to take place. The order in which those who may be chosen at the first election are annually to retire, is to be that of being returned by the smallest number of votes; and, in case of an equality of votes, the determination is to be made by a majority of the council; and after two-thirds have thus retired, those always who have been for the longest time in office without re-election are to go out; but they may be immediately re-elected if duly qualified.

The number of aldermen in every borough is to be one-third of the number of councillors. They are to be elected every third year by the council for the time being from the councillors, or from the burgesses qualified to be councillors, and one-half only of their number is to go out of office at each election; so that each alderman will in fact be elected for six years. Immediately after the first election the aldermen who shall retire at the expiration of the *first* three years are to be named by the councillors, and afterwards the order of retiring will be that of length of time in office without re-election; but the retiring aldermen are not to vote at the election of a new alderman.

We shall here speak of the mayor only as head of the local legislature, leaving his *executive* and *magisterial* functions for subsequent notice. He is to be annually elected by the council out of the aldermen or councillors.

The property qualification for mayor, alderman, or councillor is the same; namely, in boroughs divided into four wards or more, the clear possession of 1000*l.* in real or personal estate, or being rated to the relief of the poor upon the annual value of not less than 30*l.*; and in boroughs not divided into wards, or divided into less than four, the clear possession of 500*l.*, or being rated upon the annual value of 15*l.* In order to be elected councillor or alderman a person must be entitled to be on the burgess-roll of the borough; and during his continuance in either of these offices, or in that of mayor, he must also continue to possess the above-named qualification in property or rating to the relief of the poor.

Every person on being elected mayor, alderman, or councillor must make or subscribe before two or more aldermen or councillors the following declaration, or one to the same effect:—

'I, A. B., having been elected mayor (or alderman, or councillor) for the borough of ———, do hereby declare that I take the same office upon myself, and will duly and faithfully fulfil the duties thereof according to the best of my judgment and ability; [and in the case of the party being qualified by estate, say]—And I do hereby declare that I am seised or possessed of real or personal estate, or both [as the case may be], to the amount of 1000*l.*, or 500*l.* [as the case may require], over and above what will satisfy all my debts.'

The mayor and aldermen are to continue *ex officio* members of the council while they hold their respective offices, notwithstanding that it is provided that councillors shall go out of office at the end of three years.

No person in holy orders, or being the regular minister of a dissenting congregation, or holding any office or place of profit, other than that of mayor, in the gift or disposal of the council, or having directly or indirectly, by himself or his partner, any share or interest in any contract or employment connected with the council, is to be qualified to be elected, or to be a member of the council; but the proprietors or shareholders of any company for insuring, lighting, or supplying water to the borough, are not to be disqualified thereby.

Every person duly qualified who shall have been elected to the office of mayor, alderman, or councillor, must accept such office, or pay to the corporation such a fine, not ex-

ceeding 100*l.* in the case of mayor, or 50*l.* in the case of alderman or councillor, as may be determined by a bye-law of the council. Or if he do not make and subscribe the required declaration within five days after his election, he will be liable to pay the same fine, and a new election is to take place.

Every person above sixty-five years of age, or who has served the office, or paid a fine for not serving, within five years previously, is to be exempted from serving if he claim exemption within five days after notice of his election. Military, naval, and marine officers on full pay, and persons employed and residing in any of his Majesty's dock-yards, victualling establishments, arsenals, or barracks, are not to be compelled to accept office.

Councillors.—The election of councillors is to take place on the 1st of November in every year. Every burgess enrolled at the time of the election, and such only, will be entitled to vote. At any election the mayor, if he shall deem it expedient for the purpose of taking the poll, may cause booths to be erected or rooms to be hired for different parts of the borough. He is to appoint a poll-clerk at each booth or compartment of a booth, and is to cause to be fixed conspicuously on the booths the names of the parts for which they are respectively allotted. It is expressly provided that henceforth no municipal election (as in the Parliamentary Reform Act it was provided respecting parliamentary elections) shall be held in any church, chapel, or place of public worship.

Every election of councillors must be held before the mayor for the time being and the assessors, acting by deputy in the different booths, except in boroughs divided into wards. In the latter case the first election after such division is to be held before the mayor, or the person whom he shall appoint in each ward; and in each succeeding year the election in each ward is to be held before the alderman whom the councillors of that ward shall yearly appoint for that purpose, and before the two assessors of that ward, in the same manner as the elections for undivided boroughs are to be held before the mayor and assessors.

The mayor and assessors are to examine the voting-papers delivered in by the electors; and in case of an equality in the number of votes for any two or more persons, the mayor and assessors, or any two of them, are to name from among those having the equal number of votes one or more, as may be necessary to make up the number requisite to be chosen. The mayor is to cause the voting-paper to be kept in the town-clerk's office for six calendar months at least after each election; and the town-clerk is to permit any burgess to inspect the voting-papers of any year on payment of 1*s.* for each search. If at the time when an election must take place the mayor should be dead, absent, or otherwise incapable of acting, the council is forthwith to elect one of the aldermen to execute these powers and duties in place of the mayor. In the first election (1835) of councillors, assessors, and auditors, the mayor alone is to act in the same manner in which it is provided that the mayor and assessors shall do jointly in succeeding elections.

Aldermen.—After the first year (1835), the council of each borough for the time being are to elect one half of the total number of aldermen on the 9th of November in every third year. Any extraordinary vacancy is to be filled up by the council electing some qualified person, within ten days after its occurrence, on a day to be fixed by the mayor. And in case any councillor shall be elected alderman, then the vacancy thus created in the council is to be supplied in the manner above described. But after the full number of councillors regularly elected in any year shall have declared their acceptance of office, no new election is to take place on account of an extraordinary vacancy alone, unless by it the remaining number of councillors is reduced to two-thirds or less of the whole number for the borough. Every person chosen alderman to supply a vacancy, is to hold office until his predecessor would regularly have gone out.

Mayor.—The mayor is to be elected by the council. The first election being postponed by Order in Council to the 1st of January, 1836; future elections are to take place yearly on the 9th of November, commencing with the November of the same year. In case of a vacancy occurring during the year of office by non-acceptance, death, or resignation, the council are to elect another qualified person within ten days, to hold office for the remainder of the current year.

For the prevention of bribery at municipal elections, a

penalty of 50*l.* is enacted against the party either taking or offering a bribe, to be recovered, with full costs, by any one who will sue for it in any of his majesty's courts of record at Westminster.

Powers of the Council, and Regulation of its Meetings.—The appointing of officers, the enacting of local regulations, and the levying of local taxes, are distinctly recognized by the Act as the three principal powers to be exercised by the local legislature.

The council are to appoint the town-clerk, the treasurer, and such other officers as have been yearly appointed for the borough, or as they shall think necessary for the execution of the powers and duties vested in them by this Act, and may discontinue such appointments as in their opinion may cease to be necessary; they may take such security as they think proper from each, and are to direct such allowances to be paid to the mayor, town-clerk, treasurer, and other officers, as they shall think reasonable. They are empowered to remove any ministerial officer of the corporation who may be in office at the date of the first election of councillors under this Act, and to fix the compensation to be paid to such officer, subject to appeal to the Lords of the Treasury.

They are also empowered to make bye-laws 'for the good rule and government of the borough, and for prevention and suppression of all such nuisances as are not already punishable in a summary manner by virtue of any act in force throughout such borough,' and to appoint fines for such offences, not exceeding 5*l.* But all bye-laws must be made by two-thirds of the council at least, and are not to take effect until forty days after a copy shall have been sealed with the borough seal, to one of the principal secretaries of state, and have been fixed up in some public place in the borough—within which period the king in council may disallow any such bye-law wholly or in part, or to some later day for its coming into force. The council are further empowered to levy a *borough-rate* and a *watch-rate*, to appoint a *watch-committee*, and to demise and lease the borough lands, tenements, &c. under certain restrictions.

All acts done by the council, and all questions brought before them, are to be decided by a majority of the members present; but the whole number present must not be less than one-third of the whole number of the council. The mayor, if present, is to preside; or, in his absence, such alderman, or in the absence of all the aldermen, such councillor, as the assembled council shall choose for chairman at that meeting; and the chairman is to have the casting vote. Minutes of the proceedings of all such meetings are to be kept, signed by the presiding member, and to be open to the inspection of any burgess, on payment of one shilling.

In every instance a summons, signed by the town-clerk, stating the business of the meeting, is to be left at the residence or premises of every member of the council three days before the meeting, and no business is to be transacted at such meeting but that specified in the notice.

There must be four quarterly meetings of the council in every year for the transaction of general business, of which no notice need be given.

Mayor, as an executive head of the borough under the new Act.—The mayor has already been spoken of as the president of the borough legislature. In this place we mention that precedence within the borough is distinctly assigned him in the Act; and that, in accordance with the previous usage, he is to be returning officer in all parliamentary boroughs, excepting those cities and towns which, being counties of themselves, have sheriffs of their own. And if from any cause, in any borough wherein the mayor is returning officer, there be no mayor at the time of a parliamentary election, the council are to elect one of the aldermen to be returning officer. And in any case in which there shall be more than one mayor within the limits of a parliamentary borough, the mayor of that municipal borough to which the writ of election is directed is to be the returning officer.

A new class of officers, under the name of *assessors*, is created by the Act, to assist in each borough, and in each ward in boroughs divided into wards, in revising the burgess lists, and presiding at municipal elections. Of these officers there are to be two in boroughs not divided into wards, and two for each ward in boroughs which are divided. They are to be annually elected by the burgesses at large; and their pecuniary qualification must be the same in every respect as that of councillors. Every person

must accept office when elected; and must make and subscribe the declaration of acceptance and qualification within five days, as required in the case of mayor, alderman, and councillor.

The office of the assessors is, to revise the burgess-lists in conjunction with the mayor, at the annual courts to be held for that purpose; to be present with the mayor or an alderman, in the respective boroughs or wards, at each annual election of councillors, auditors, and of those who are to succeed them in the office of assessor; and to ascertain and declare the result of such elections.

3. Ministerial Officers; their Appointment, Designation, and Functions.

The chief ministerial officers of a borough, as hitherto constituted, have been the public secretary and general adviser of the corporation, called most frequently the *town-clerk*, though sometimes the *common-clerk*; and the treasurer, or depositary of the public revenue and keeper of the public accounts, commonly styled *chamberlain*. Both these officers have been appointed during good behaviour, usually by the common council; the former sometimes, and the latter in a great majority of instances, out of their own body.

In a few places, the town-clerk was named by the recorder, and occasionally he was nominated or approved by the crown. In some towns he was elected yearly by the freemen from themselves; and in most, it was necessary that he should be a freeman. He was generally required to reside in the borough, and usually was an attorney. He had generally a salary, which however in most cases was little more than nominal; the real inducement for holding the situation being the legal business, for which he was paid according to the usual scale of professional charges, or the introduction to private practice through his connexion with the members of the corporation.

The chamberlain's duties have been, to receive the revenues, make the requisite payments to the order of the competent authorities, keep the accounts, and superintend the corporation property. In some instances the head of the corporation acted as treasurer; in which case, as in every other in which the chamberlain was a member of the common council, he commonly belonged to the body by which his accounts were audited. But in some large towns, as London, Bath, and Bristol, this has never been the case. The chamberlain has been sometimes paid by a poundage on the income collected by him, but more frequently by a salary, and by the profit of balances left in his hands: in corporations where his receipts were considerable, he was often required to give security.

Inferior officers were found, more or less numerous, in all the corporate cities and towns. These were either officers of ceremony, as sword-bearers, mace-bearers, &c.,—of police, as constables, sergeants at mace, or town-serjeants,—and others, as beadles, criers, &c., whose functions are sufficiently indicated by their appellations. They were nearly always freemen under the control of the governing body. Many of them had neither duties, fees, nor salaries; yet they were yearly elected and solemnly sworn to the fulfilment of their nominal functions, the corporations doubting whether they could legally cease to elect any officers named in their charters. The common council of London however has assumed the authority of abolishing some useless offices, consolidating others, and attaching to them new and useful functions.

Defects in the old Constitution of the Ministerial Offices.—'One vice,' say the commissioners, 'which we regard as inherent in the constitution of municipal corporations in England and Wales is, that officers chosen for particular functions are regarded as a necessary part of the legislative body. This notion appears to have originated in times when the separation of constitutional authorities was not understood; when legislative, judicial, and executive functions were confounded. . . . There are serious objections to the practice of allowing the mayor to act as the treasurer of the corporation, when the examination and audit of his accounts is placed in the body over which he presides. Inconvenience of an opposite kind occurs where several persons are required to concur in executing the duties of a single office.'

The extent to which some corporations carried the principle of treating the corporate offices as matter of mere patronage, is illustrated in the commissioners' general report, by two instances where, in two considerable towns,

that principle had been applied to the very important office of town-clerk.

Ministerial Offices, as now to be regulated.—The new Act provides not only for the discontinuance of useless offices, but for the more effective, regular, and faithful discharge of those of essential utility. The principal ministerial officer is still to be styled *town-clerk*; but for the designation of *chamberlain*, that of *treasurer* is in all cases to be substituted.

It is directed in the Act, that the council of every borough, on the 9th of November, 1835, shall appoint a fit person to be a town-clerk; but by an order in council of October 6th, the first appointment of town-clerk under this Act was postponed to the 1st of January, 1836. The town-clerk so appointed is to hold his office during pleasure. He may be an attorney of one of the superior courts at Westminster, notwithstanding any law or custom now existing to the contrary: he must give such security as the council may require, for the due execution of his office; but he must not be the treasurer of the borough, nor a member of the council, nor will he be eligible as auditor or assessor; and his salary is to be determined by the council, who may fill up any vacancy in the office by a fresh appointment.

The town-clerk of every borough is to perform the duties connected with the registering and enrolment of burgesses. In cities or boroughs returning a member or members to Parliament, he is likewise to do all things appertaining to the due registration of the freemen or burgesses, according to the provisions of the Reform Act. He is to be exempted from serving on any jury, either in the borough, or in the county wherein the borough is situated. He is also to have the custody of the borough charters, deeds, and records.

The council are directed to appoint every year a fit person to be *treasurer*; he is to give such security as the council may require. He must not be the town-clerk of the borough, nor a member of the council, nor will he be eligible as auditor or assessor. His salary is to be determined by the council, who may fill up any vacancy by a fresh appointment. He is to keep true accounts, entered in books kept for that purpose, of all sums received and paid by him, and of the several matters for which such sums shall have been received and paid; and the books containing the accounts are to be open at all reasonable times to the inspection of any of the aldermen or councillors of the borough. And he is to submit all the accounts, with all vouchers and papers thereto relating, to the auditors twice in every year; and after they have been examined and audited by the auditors in the month of September in every year, he is to make out in writing, and cause to be printed, a full abstract of his accounts for the year; a copy of which is to be open to the inspection of all the rate-payers of the borough, and copies are to be delivered to all rate-payers applying for them, on payment of a reasonable price for each copy.

III. OPERATION OF OLD ORGANIZATION FOR LOCAL GOVERNMENT, AND DIFFERENT ARRANGEMENTS UNDER THE REFORM ACT FOR ENGLAND AND WALES:—1. IN LOCAL REGULATIONS.—2. IN MANAGEMENT OF CORPORATE PROPERTY AND REVENUES.—3. IN LOCAL TAXATION.—4. AS TO SPECIFIC TRUSTS AND PATRONAGE.

1. Local Regulations.

The police belonging to municipal corporations, under the old system, was for the most part very insufficient. In a great number of towns there were no watchmen, nor police-officers of any kind, except the constables, who were unsalaried officers, appointed sometimes at a court leet, but more frequently by the corporate authorities. Where there were fairs and markets held within the borough limits, the municipal corporation had in most cases the superintendence and management of them, as incident both to its property and to its general municipal authority. Many of these had courts of *pie-poudre*, which were disused in the majority of instances.

Already we have remarked the general resort which has been had to local Acts of Parliament to supply the serious deficiencies of the old municipal regulations; and that the superintendence of the police, and the powers necessary for watching, paving, lighting, cleansing, and supplying the towns with water, were for the most part committed, in each town, under these acts, to one or more bodies of commissioners, independent of the municipal corporation. Sometimes, indeed, these powers were shared between the corporate authorities and the commissioners; and often

many of the corporate functionaries were named in these acts as commissioners, by virtue of their corporate offices. But much confusion resulted from this divided authority. In several towns, owing to the general distrust of the corporate authorities, the inhabitants showed little alacrity to avail themselves of the provisions of these local acts. Great jealousy often subsisted between the officers of police acting under the corporation, and those under the local commissioners: and the corporate body seldom took any active share in the duties of the board of which its members formed a part. At Bristol (one of the principal towns of which the corporations, after the Revolution, clung to the new governing charter imposed by Charles II.) a notoriously ineffective police could not be improved, chiefly through the jealousy with which the corporation was regarded by the inhabitants. At Hull, owing to the disunion between the governing body and the inhabitants, arising chiefly out of a dispute about the tolls and duties, only seven persons attended to suppress a riot, out of a thousand who had been sworn in as special constables; and on another similar occasion none whatever attended. At Coventry serious riots and disturbances frequently occurred; and the officers of police, being usually chosen from one political party, often actively fomented them. In some instances the separate and conflicting authority of the commissioners was avowedly used to counterbalance the political influence of the corporation. An ineffectual endeavour to obviate the evils resulting from the want of a well-organized system has been made in some towns by subscriptions for private watchmen. Nor has the superintendence of the paving, lighting, &c., of the various corporate towns been hitherto in a more satisfactory state.

For the police of the reformed municipalities, the Act of 1835 makes, among others, the following uniform provisions:—

The council, immediately after their first election, and from time to time, are to appoint, for such time as they may think proper, a *watch committee*, consisting of the mayor and a sufficient number of councillors, of whom three are to be a quorum. Within three weeks after their first appointment, and from time to time, this committee are to appoint, and cause to be sworn in before a justice having jurisdiction within the borough, a sufficient number of fit men to act as *constables* by day and night, for preserving the peace, preventing felonies, and apprehending offenders. The constables are to have the usual powers, privileges, duties, and responsibilities, not only within the borough, but also in the county in which the borough or part of it is situated; every county that is within seven miles of any part of the borough, and all liberties within such county; and are to obey all lawful commands of any justice of the peace having jurisdiction in such borough or county.

The treasurer of the borough is to pay such wages and allowances as the watch committee, subject to the approbation of the council, shall direct to be paid to the constables; and also such sums as they may award, subject to the same approbation, as a reward for extraordinary diligence and exertion, or as a compensation for wounds and injuries received in the performance of duty, or as an allowance to those that may be disabled or worn out by length of service; and any other expenses for the constabulary force, so directed and approved; also any extraordinary expenses necessarily incurred in apprehending offenders and executing any orders of any justice of the peace for the borough, ordered by the council to be paid, such expenses having been first approved by the justices.

Two or more justices having jurisdiction within any borough are, in the month of October in every year, to appoint, under their hands, so many inhabitants (not legally exempt) as they shall think fit, to act as *special constables* when required by a justice's warrant, reciting that in the opinion of the justice granting it the ordinary police force is insufficient at that time to maintain the peace. And every person appointed a special constable is to take the oath set forth in the Act of 1 & 2 Will. IV. cap. 41, and to have the powers and immunities, and be liable to the duties and penalties therein enacted; and is to receive out of the borough fund 3s. 6d. for each day during which he is called out to act.

The watch committee, on the 1st of January, April, July, and October, in every year, are to transmit to one of the secretaries of state a report of the number of constables or policemen, the description of arms, accoutrements, clothing, & necessaries, furnished to each man, their wages and

allowances, and the number and situation of all station-houses in the borough; as also a copy of all rules, orders, &c., made from time to time for the regulation of the constables or policemen.

With a view to the merging in the general authority of the municipal council of the powers vested in so many of the boroughs, by the local acts of which we have already spoken, in the hands of independent boards of commissioners, it is provided that the trustees appointed by virtue of any Act of Parliament, for paving, lighting, cleansing, watching, regulating, supplying with water, or improving any borough or part thereof, wherein they or the persons whose trustees they may be are not beneficially interested, may, at a meeting called for that purpose, transfer, in writing under their hands and seals, all the powers so vested in them by any such act, to the body corporate of such borough, who shall thenceforth be trustee for executing, by the council of the borough, the several powers and provisions of such act; and the members of the council are in that case to have the same powers and be subject to the same duties as if their names had been originally inserted in the act, or they had been elected under its provisions. A list of boroughs, and of the Acts of Parliament for the above-named purposes, the powers and duties under which the trustees are by this section of this act empowered to transfer to the council of such boroughs, is given in schedule (E) appended to the act; but it is provided that no such transfer shall be made of powers under the acts therein mentioned, relating to the town of Cambridge, without the consent of the chancellor, master, and scholars of the university there.

With respect to *lighting*, it is further provided that the council of any borough having a local act for lighting part thereof only, may make an order to include any other part within its provisions after a certain day named. And after such day it is to be so included, so far as relates to lighting or to any rates authorized to be levied for that purpose. And every such part is to be lighted like the other parts of the borough, and to pay for that purpose a rate not exceeding the average expense in the pound of the lighting of those other parts. If the council of any borough shall, by notice fixed in a public place within the borough, declare that on a certain day named (not within twenty-one days), they will take upon themselves the powers given to inspectors named in the Act of 3 & 4 William IV. cap. 90, so far as it relates to lighting the whole or any part of a borough not within the provisions of any local act, or in which there is no power of levying rates for lighting, the council of such borough are to have, after the day named, the same powers and duties as the inspectors under the last-mentioned act, for lighting and levying rates for that purpose, so far as they are consistent with the provisions of this act. And the council alone are to fix the sum to be called for in any year for lighting such part, which must not exceed sixpence in the pound on the annual value of the rateable property therein; and in such case, the inhabitants of such part of the borough are not to have power to decide that the provisions of the above-named act shall cease to be acted upon.

2. Management of Corporate Property and Revenues.

Many of the old corporations had considerable revenues derived from various sources; from lands, leases of tithes, and other property; from tolls of markets and fairs; from tolls or duties on the import or export of goods and merchandise, commonly called town dues; from other duties, as quay dues, anchorage, &c.; and from fees payable on the admission of corporate officers and burgesses, as well as from fines imposed on persons refusing municipal office. In many corporations the revenue was sufficient for the maintenance of all necessary municipal institutions; but in these they were often but partially applied to really municipal purposes. In most, however, the commissioners declare that they would have been inadequate to these purposes, even though they had been wholly expended upon them. There were many instances among the parliamentary boroughs in which, the revenues being inadequate to the wants of the municipality, the deficiency had been supplied either by the political patron or by the members for the borough. In some, before the passing of the Parliamentary Reform Act of 1832, the members or the patron paid all the municipal expenses; and these contributions having ceased since that time, such corporations have no longer had the means of maintaining municipal institutions of any kind.

In numerous instances, too, individual corporators were accustomed to receive pecuniary allowances from the patron; which sources of emolument having likewise ceased in great measure since the passing of the Reform Act, a principal inducement to belong to the corporate body has been thereby in many places taken away.

Both the income derived from market and fair tolls, and that from town dues, have been subjects of general complaint, grounded as well on the consideration that the money thus levied has seldom been applied for the good of the community, as on the vexatious and injurious nature of that kind of taxation—arising, in some places, from the exorbitancy of the tax—in others, as at Bristol, from its tendency to limit the trade of the port; besides that, whatever may have been the origin of these tolls, in latter times they have been paid, in many instances, without any equivalent being rendered by the corporations which have enforced them. The income arising from fines levied on persons refusing to serve corporate offices has also been a source of reasonable complaint, where such fines have been levied, not really for the purpose of compelling individuals to serve, but for the sake of increasing the funds of the corporation.

The most glaring evils have resulted from mismanagement of the corporate property. Some corporations have been accustomed to let their lands by private contract to members of their own body, on rents and at fines wholly disproportioned to their value, and frequently for long terms of years. Others have alienated in fee much of their property for inadequate considerations. In large towns however the prevalent species of malversation has been, not so much the clandestine appropriation of the corporate property, as carelessness and extravagance in the administration of the municipal funds, and an exclusive distribution of patronage among friends and partisans.

In some towns large sums have been spent in bribery and other illegal practices at contested parliamentary elections. The corporation of Leicester, for instance, in 1826, expended 10,000*l.* to secure the return of a political partisan, and mortgaged some of their property to discharge the liabilities thus incurred. At Barnstaple and Liverpool, in like manner, the funds of the corporation have been wasted in defending from threatened disfranchisement a body of freemen who had been proved guilty of bribery. In general, the corporate funds have been only partially applied to municipal purposes, as the providing an efficient police, the watching and lighting the town, &c., but have frequently been expended in feasting and in paying the salaries of unimportant offices. The allowance to the head of the corporation was often very large; and it was well understood that he was to spend it in public entertainments. The practice of having periodical dinners, &c. for the members of the common council and their friends, the cost of which was defrayed out of the corporate funds, was almost universal, and in some places consumed a large portion of the revenues.

The commissioners found the debt of many corporations to be extremely heavy, owing often to negligent and improper management. In some, the payment of the interest absorbed a very large proportion of the income; others were absolutely insolvent. Many of the close corporations had become indebted to the patron of the borough for sums of money advanced to them for municipal and other purposes.

Some check might have been imposed on these various abuses by the force of public opinion, had the corporate accounts been regularly kept and regularly subjected to public inspection: but so irregularly had they been kept, that in the course of the late municipal inquiry, the facts relative to the amount and management of corporate property, the expenditure, and the debts, were in many places elicited with difficulty and imperfectly. In some places no accounts at all were kept; in others they were kept very incompletely; in very few was there any regular and efficient audit, and in still fewer any publication of them.

The new Act will be found to provide efficient remedies for these defects in the financial department of municipal government.

After the election of the treasurer, the rents and profits of all hereditaments, and the interest, dividends, and annual proceeds of all monies, dues, chattels, and valuable securities belonging to the former body corporate of such borough, named in the schedules (A) and (B), or to any member or officer thereof in his corporate capacity, and every fine and penalty for any offence against this act, the application of which is not otherwise therein provided for, is to be paid to

the treasurer of the borough, and to be carried by him to the account of a fund to be called 'the borough fund.'

This fund, subject to the payment of all lawful debts due from the late body corporate contracted before the passing of this act, with all interest accruing while any part shall remain unredeemed, and saving all rights or claims in or upon the real or personal estate of such body corporate by virtue of any proceedings in law or equity, or of any mortgage or otherwise, is to be applied towards the payment of the salary of the mayor, and of the recorder and the police-magistrate (where the latter functionaries shall be created), the salaries of the town-clerk, treasurer, and every other officer appointed by the council; as also towards the payment of the expenses incurred from time to time in preparing burgess lists, ward lists, and notices, and in other matters connected with the borough elections, and for other necessary and useful purposes mentioned in the act.

The council are not permitted to sell, mortgage, or alienate any part of the borough lands, tenements, or hereditaments; and leases granted by them are to be for a term not exceeding thirty-one years from the date of the lease, or of a previous agreement, should there be one; and leases are to be at a clear yearly rent, without any fine: except the yearly value of the property shall arise principally from buildings, or the property shall consist of land for the erection of buildings, on which the lessee shall covenant to erect buildings of greater yearly value than the land, or for laying out gardens, yards, or other appurtenances to buildings, in which case the lease may be for any term not exceeding seventy-five years.

In special cases the council may sell, or alienate, or demise, or lease for a longer term than thirty-one years, by representing the circumstances to the Lords of the Treasury, and obtaining their approbation of the act, and of the terms and conditions; but in such case the council must give one month's notice, fixed in some public place in the borough, of their intended application, and a copy of the memorial to be sent to the Lords of the Treasury must lie during that period in the town-clerk's office, open to the inspection of every burgess.

Not only the regular keeping and the publicity of accounts, but that important article in the financial department of borough government, the regular and responsible auditing of them, are now first uniformly and effectively provided for. Two auditors are to be elected for each borough or ward by the burgesses, in precisely the same manner as already described in the case of assessors. Twice in every year they are to examine and audit the treasurer's accounts, in conjunction with a member of the council to be named by the mayor.

3. Local Taxation.

Municipal taxation under the old system was as irregular as all its other financial arrangements. The almost universal persuasion on the part of the members of corporations, that the permanent income derived from rents, tolls, dues, &c., was of right applicable to the sole benefit of the corporators themselves, and the consequent unprofitable expenditure of that income, called the powers of local taxation, where the corporation possessed them, into additional activity, though generally with no equivalent advantage to the inhabitants. The introduction, too, in so many places, of local acts of parliament for the realization of objects of public utility, which, according to their nature, should have fallen strictly within the province of municipal administration, must often have brought them, in the levying of local rates, into an actual or seeming collision with the boards of commissioners appointed under those acts. In some boroughs the corporation levied on the inhabitants a rate in the nature of a county-rate, and destined to similar objects.

The Municipal Reform Act, as we have already observed, opens the way for transferring the powers of the local boards to the municipal councils, and so introducing one general and uniform system of municipal taxation. After providing, as above described, for the faithful appropriation of the standing revenue of the borough to public objects, it proceeds to direct how such additional funds are to be raised as may be necessary to defray the charges of those arrangements for the public convenience and security of which it ensures the execution.

4. Specific Trusts and Patronage.

Besides the property applicable to all municipal purposes,

various funds and revenues have at different times been entrusted to corporations for specific objects. Tolls and dues, for instance, have been granted for some purpose of local utility, as the maintenance of a navigation or a harbour, and granted for such purpose exclusively. Financial abuses, of the same nature as those which we have already noticed, have appeared in the management and application of those funds. Other special trusts are connected with charitable institutions and the administration of charity funds; and here again we find mismanagement and misappropriation to a considerable extent: the patronage connected with these trusts has very often been exercised by the corporate authorities to gain or reward votes both in the municipal and the parliamentary elections. In many instances, too, the corporations have possessed ecclesiastical patronage, presenting to livings, and appointing lecturers; as well as the masters of hospitals and endowed schools.

The new body corporate of any borough named in the schedules to the Municipal Reform Act are to be trustees for executing, through the council, the provisions of all Acts of Parliament made before the passing of this Act, and of all trusts (except under Acts of Parliament or for charitable purposes) of which the former body corporate, or any of its members as such, were sole trustees. In like manner, wherever the former body corporate, or any of its members as such, or any particular number of persons appointed by it, were trustees jointly with others, under any Act of Parliament or trust,—or were, by any statute, charter, by-law, or custom, lawfully exercising any powers or functions not otherwise provided for by this Act,—provision is made for the transferring of such joint trusteeship to so many members of the new municipal council, appointed by the council at large, as shall be equal in number to the members or nominees of the former corporate body acting as such trustees or exercising such functions.

As regards charitable trusts, it is deemed expedient that their administration should be kept distinct from that of the public funds of the municipality: therefore, wherever the former body corporate, or any of its members as such, stood solely, or together with other persons elected solely by them, in the exercise of any trust of this nature, it is, under the Act, to continue in the hands of the same individuals (notwithstanding that they may have ceased to hold any office by virtue of which they were such trustees) until the 1st of August, 1836; when, if Parliament shall not in the mean time have otherwise directed, the Lord Chancellor, or Lords Commissioners of the Great Seal, are to make such orders as he or they shall deem fit for the administration of such charitable trust estates.

The anticipated influx of dissenters into the new municipal councils rendered the ecclesiastical patronage of the corporations a subject of grave debate in the discussions on the measure of municipal reform. The difficulty has been obviated thus. Where any former body corporate, or any number of its members as such, possessed any property (otherwise than as charitable trustees) to which any advowson or right of presentation or nomination to a benefice or ecclesiastical preferment was attached, or possessed any advowson in gross, or any right so to present or nominate, every such advowson, and right of presentation or nomination, is to be sold under the direction of the ecclesiastical commissioners, so that the best price may be obtained. The council are accordingly authorized to convey such right to the purchaser under the common seal of the borough; and the proceeds of the sale are to be paid to the treasurer, to be invested in government securities for the use of the new body corporate, and the annual interest is to be carried to the account of the borough fund. Any vacancy occurring before the effecting of such sale is directed to be filled up by the bishop of the diocese in which the preferment is situated.

IV. ORGANIZATION FOR LOCAL JUDICATURE.

Magistracy.—In almost all the principal boroughs there were municipal magistrates whose authority as justices of the peace extended over the whole borough. In some cases the county magistrates exercised a concurrent jurisdiction within the borough; but more commonly that of the borough magistrates was exclusive; and even where the county magistrates possessed a concurrent jurisdiction within the municipal limits, they rarely exercised it. The head of the corporation has always been the chief municipal magistrate named in the charters; and in some few instances he has been, by virtue of his municipal office, a

magistrate also of the neighbouring county. In many of the large cities and boroughs all the aldermen were magistrates; in others only those who had 'passed the chair,' that is, who had served the executive office. At Norwich, the aldermen who had not passed the chair were magistrates in their several wards. In other towns only a certain number of the aldermen were elected magistrates yearly; in many, only the senior aldermen were magistrates: in Doncaster, three aldermen were chosen to be magistrates as long as they continued aldermen: in Ripon, the two aldermen who had last been mayors were magistrates: in Richmond, the last mayor only was so constituted.

The judicial officer styled *Recorder* was also usually one of the justices. The chief amount of magisterial business was done by the mayor: in some corporations his magisterial authority continued for a year, or a longer time beyond the period of his mayoralty, either by the terms of the charter or by a customary election.

Defects, &c.—The magistrates were usually chosen from the aldermen, and the aldermen were generally political partisans. Hence, even in those cases where injustice was not absolutely committed, a strong suspicion of it was excited; so that the corporate magistrates generally were not regarded by the inhabitants with favour or respect, but often with positive distrust and dislike. In many places there were heavy complaints of their non-residence.

Magistracy under the Municipal Reform Act.—Among the municipal officers, the mayor alone is to be a justice of the peace by virtue of his office, in every borough, not only during his year of office, but during the whole of the year next following, if he continue to be pecuniarily qualified. But an important change is worked by the Act in the constitution of the borough-magistracy in general. The executive officer of each borough will henceforth be its only elective magistrate. Wherever there is to be a body of justices in addition, and wherever there are to be one or more police-magistrates, they are to be appointed by absolute nomination of the Crown.

It is to be lawful for his Majesty from time to time to assign a commission to act as justices of the peace in and for each borough and city named in the schedule (A); and to assign one likewise, upon petition of the council, to any of the boroughs in the schedule (B); every such justice to reside in, or within seven miles of, the borough for which he acts. And if the council of any borough think it requisite to have one or more salaried police-magistrates, they are to make a by-law fixing the salary, and to transmit it to one of the Secretaries of State; and his Majesty, if he think fit, will appoint one or more persons, as required, barristers-at-law of five years' standing, to be, during his pleasure, police-magistrates and justices of the peace; and will direct the payment of a salary to each, not exceeding the amount fixed by the council, through the treasurer of the borough, out of the borough fund, in four quarterly payments. When any vacancy occurs, a new application, as before, must be made by the council.

Recorder.—Almost every English municipality had among its principal officers a recorder, sometimes called *steward*, who was always the principal judicial adviser of the corporation, and commonly exercised magisterial and judicial functions. He was elected in the majority of cases by the common-council; in many others, by the aldermen: in some, by the freemen at large: occasionally his appointment was subject to approbation by the crown. By the terms of most of the charters he was required to be learned in the law. This condition was sometimes considered to be complied with by electing a peer of the realm, who, being a judge by the constitution of Parliament, was held to come within that technical description. Sometimes, however, recorders were chosen, notwithstanding such provision in the charter, who were neither peers nor educated to the legal profession: the office was sometimes filled by the individual who was commonly styled the *patron* of the borough: but in most of such cases, either there were no real functions to be exercised by the recorder, or he had the power of appointing a deputy, by whom most of his duties could be performed. The recorder generally held his office during good behaviour: he was seldom required to be resident in the borough. His deputy was sometimes a barrister, but in numerous instances the town-clerk practically officiated as such. The recorder's salary was in most cases nearly nominal, and in many had not been received for several years; in others the salary was large.

Defects, &c.—The method of appointing this influential officer is reported by the English commissioners to have been often very objectionable. At Newport, in the Isle of Wight, for instance, he was appointed formally by the crown, but actually on the patron's dictation. On one occasion a nobleman was chosen recorder there whose connexion with the corporation consisted in his being a trustee for managing the property of a deceased patron. At Woodstock the office had been vacant for several years because the patron's nominee was opposed. In some boroughs the recorder was elected by one of those demoralized constituencies of freemen which we have already described; and at Berwick a recorder so chosen tried capital felonies. In some cases, too, this officer united functions improperly joined; as, for instance, when, living in the neighbourhood, he acted as a resident magistrate at the same time that, by virtue of his office, he was presiding judge in the criminal court. In many instances he performed no duties whatever; and his nominal connexion with the borough was merely a form through which he exercised over it an unwarrantable control. The power of appointing deputies, as hitherto exercised, is strongly objected to by the commissioners. 'Such exercise,' say they, 'has been occasionally useful; but the practice of appointing a deputy permanently to discharge all the duties of the recorder has been very mischievous.'

Recorder under the new Act.—In the appointment of this leading judicial officer, as in that of all the borough justices excepting the mayor, nomination by the crown is to be substituted for election by the members of the corporation.

The council of every borough, desirous of having a separate court of quarter-sessions, is to petition the king in council, setting forth the grounds of the application, the state of the gaol, and the salary they will pay the recorder; and his Majesty, if he be pleased to grant such court, will appoint a recorder of the borough, or one for two or more boroughs conjointly, who is to be a barrister of five years' standing, to hold office during good behaviour; and will, when any vacancy occurs, appoint another such person to fill the office.

Town Clerk as a Judicial Officer.—In some boroughs the duties of town clerk have been separated from those of attorney and solicitor to the corporation; but generally, and almost necessarily, he has been an attorney; and the influence attendant on his office as general legal adviser, combined with his intimate knowledge of all the corporate affairs, led in most instances to his being appointed the recording officer, not only of the public transactions of the corporate body, but of all the magisterial and judicial proceedings of the corporate justices;—in technical language, he was not only town-clerk, but also *clerk to the magistrates, or justices' clerk; clerk of the peace*, that is, of the criminal court of sessions of the peace; and *registrar of the court of record*, or civil court. Moreover, he was often appointed deputy recorder, and usually conducted inquests when the head of the corporation was *coroner ex officio*.

Defects, &c.—The most incompatible offices,' observe the commissioners, 'are often united in the person of the town-clerk. He very frequently acts as deputy recorder; which practice, in our opinion, cannot be too strongly condemned. He is often, practically, the principal attorney for the prosecution of offenders tried at the borough sessions, whose commitment he had previously advised in his character of clerk to the magistrates. Even when his name does not appear to the prosecution, the same evil often ensues from its being in the hands of his partner. In York and Hull great complaints have been made of the conduct of prosecutions by the town-clerk's partner, and in the latter place of the advantages which the rules of practice give him over other attorneys. In Preston the town-clerk is a member of the council, and his partner is the senior alderman, a magistrate, and a coroner. A strange incongruity sometimes appears in the election of the town clerk to the office of mayor: in some places where this has occurred an attempt has been made to gloss over the irregularity, by appointing another town-clerk during the year of his mayoralty. Whilst the same officer thus unites the characters of judge and prosecutor, the selection of the juries is often entirely committed to his discretion, and it cannot be a matter of surprise that suspicions of unfairness and partiality should be excited.' In the civil courts, likewise, when the recorder did not attend, the town-clerk became the real judge, from the incompetence of the other magistrates to perform the duty. 'At Reading,' say the commissioners,

'the town-clerk, during his mayoralty, tried and taxed the costs of a cause in which his partner was one of the attorneys. In many towns, although he does not practise in the court of record as an attorney in his own name, he is the real attorney in the cause. At Kendal the town-clerk's partner, who is an alderman, practises in the civil court. The same thing occurs at Scarborough, where the town-clerk acts as assessor in the civil court, and also taxes the costs. This union of conflicting duties is very adverse to the proper administration of justice; it is a frequent cause of suspicion and jealousy amongst the inhabitants, even where the character of the officer is a security against improper conduct. It is justly made the subject of complaint, that the town-clerk should act as an attorney of the court, either in his own name or in that of his partner or agent, as in fact it places the whole power over the proceedings of the suit in the hands of the attorney of one of the parties.' Besides that the town-clerk often selected the juries in these as well as in the criminal courts.

Improvements, &c.—Provision is made by the Corporation Reform Act for obviating that vicious union of incompatible functions, especially in the magisterial and judicial departments, which made the office of town-clerk one of the most injurious anomalies in the old municipal system, and in particular for keeping the office of clerk of the peace distinct from that of clerk to the justices.

The justices of every borough to which a separate commission of the peace shall be granted are to appoint a clerk, removable at their pleasure: but the *clerk to the justices* must not be an alderman or councillor of the borough; nor must he be the *clerk of the peace* of the borough, or his partner, or any clerk or person employed by him. Also the clerk to the justices must not be, by himself or his partner, directly or indirectly engaged in the prosecution of any offender committed for trial by the justices to whom he is clerk.

Immediately on the appointment of a recorder of the borough by the crown, as above described, the borough council are to appoint a *clerk of the peace*, to hold office during good behaviour.

Sheriffs.—In the twenty-one cities and boroughs of England and Wales which possess a county jurisdiction, two sheriffs are chosen yearly, whose office is strictly analogous to that of the sheriff of an ordinary shire, but whose appointment is never, like that of the latter, made by the crown, but by election on the part of the whole corporate body, or some class of that body. Thus, in London they are chosen by the liverymen from two lists, consisting of the aldermen and the mayor's nominees; besides which any elector may name a candidate. At Carmarthen and Poole they were chosen by the freemen from among themselves; at Bristol, Exeter, and Gloucester, by the common council from among themselves; at Canterbury, by the mayor and aldermen from the citizens; at Haverfordwest, by the freemen from the nominees of the common council; in Hull, by the freemen from two persons nominated by the common council; at Southampton, practically, by the common council from those who had served the subordinate office of bailiff; at Newcastle-upon-Tyne, by the mayor; at Lincoln, one by the common council, the other by the mayor elect, both from the freemen who had served the office of chamberlain.

The city and borough sheriffs have often had the care of the gaol and the custody of the prisoners confined there. Their emoluments have been the ordinary ones attached to the same office in counties; besides which, in some towns they have received salaries. They usually performed the duties by deputy.

The office of sheriff in corporate counties remains elective as before, with the same powers and duties. The Municipal Reform Act of 1835 simply provides that the election shall in all cases be made by the council, on the 1st of November in every year; the sheriff elected according to former custom remaining in office until the first election under this Act, and no longer.

Bailiffs, &c.—In those boroughs in which *bailiffs* were found among the chief officers subordinate to the head of the corporation, they performed the duties of sheriffs. They seem to have been originally receivers and managers for the crown, or other lord of the borough, and not to have had any duties in connexion with the corporate body, until after the property of the soil became vested in the corporation, when the bailiffs also became corporate officers. They

often had the custody of the gaol. In many places the office had become entirely nominal; in others its original duties had been superseded by those of treasurer, &c. It was sometimes filled by one person, oftener by two; at Berwick it was vested jointly in five, by three of whom bailable process must be signed. Their emoluments arose from the same sources as those of the sheriffs; in some towns they received a salary, in others they were remunerated by the profits of part of the corporate property.

Criminal Courts.—A court of criminal judicature has been held until the present time in most of the boroughs of England and Wales, though in some this branch of jurisdiction has long been disused, and in others it has been of late but partially exercised, all serious cases being sent by many to the county sessions or assizes. Some of those which formerly exercised jurisdiction over capital offences had since abandoned it: others, as Salisbury, Southampton, and Chichester, still tried capital offences; but where capital punishment was expected to follow conviction, an arrangement was made to prevent a trial before the corporate authorities solely. Several corporations, as those of Berwick, Bristol, Canterbury, Exeter, and Rochester, still exercised their chartered power of trying and executing for capital offences. In a few instances the criminal jurisdiction included that of a court of admiralty; at Bristol, for example, felonies committed on a part of the Bristol channel were triable at the ordinary court of gaol delivery, not as at a court of admiralty, but as committed within the limits of the corporate county. At Marlborough, where the justices were nominated by the mayor, felonies were tried until 1824, when it was discovered that the corporation possessed no such jurisdiction.

The ordinary criminal courts were those of general sessions and quarter-sessions. Courts of general gaol delivery existed in very few places: in some of these they were held under charter without any commission issuing from the crown, while in London, Oxford, and some other places, they were never held without such a commission: where no commission issued, the corporate magistrates were the sole judges; the time of holding these courts was sometimes discretionary with the corporate magistrates, sometimes regulated by the charter, as at Exeter, where they must be held four times a year, and in practice have been opened at the same time as the quarter-sessions. The general sessions, too, the ordinary criminal court of the cities and boroughs, seldom differed, as to the time and manner of holding them, from the county quarter-sessions. In all the corporate courts one or more magistrates were specially named, without whose presence the court could not be held; usually it was the mayor or the recorder, sometimes both. In some cases where the presence of the recorder was not necessary for holding the court, he did not attend, but in many the whole business was conducted before him. At Bristol he tried the prisoners at the gaol delivery, but did not attend the quarter-sessions, the prisoners at the latter being tried before the mayor and aldermen, but virtually by the town-clerk, who there was necessarily a barrister.

The *jurors* were generally summoned from the inhabitants at large, without strict reference to any qualification; sometimes from the freemen alone. In the latter case, the number out of whom they were chosen was often inconveniently small.

In many boroughs no fund was provided for paying the expenses of prosecutions; in some they were paid from the county-rate; in others from a borough-rate in the nature of a county-rate; in others from the poor-rate. In many of the principal towns, as Liverpool, Leeds, Bristol, Hull, York, Newcastle, Berwick, the criminal courts were attended by barristers; but in most of the smaller places the business was conducted solely by attorneys.

Civil Courts.—A great majority of the English and Welsh municipalities possessed also a civil jurisdiction co-extensive with the borough limits. These in general had their origin in particular charters, but occasionally existed by prescription. They varied considerably as to the nature of the actions they might entertain. In general they had cognizance of all personal actions; and in some instances of actions real, personal, and mixed. The amount for which such actions could be brought was often unlimited (subject to the power of removal), while in several cases it was restricted to the recovery of debts under a given amount. The presiding judge in these courts was generally the mayor, whence they were not unfrequently termed the

mayor's courts. Sometimes the bailiffs presided with the mayor; in other instances the recorder, and occasionally some of the aldermen were judges; in other cases the recorder, though a magistrate of the borough, was not a judge of the court of record; in many the town-clerk practically officiated as such. The officers of these courts were generally the town-clerk and the bailiffs or serjeants-at-mace. The town-clerk usually performed all the duties, except those belonging to the office of sheriff; he issued writs, filed and enrolled the proceedings, granted rules, taxed the costs, and signed the judgments. The bailiffs or serjeants-at-mace performed the duties which, in actions brought in the superior courts of common law, devolved upon the sheriffs of counties. To them writs were directed; by them they were served and returned, and generally they were answerable, like sheriffs of counties, for any irregularity in the service. It must be understood, however, that the character of the officers described by these names varied in different boroughs; but in every court there was, under some name, a functionary performing these duties.

The borough courts of record, in their general constitution, resembled the superior courts of common law. Where created by charter, the proceedings were according to the practice of some one of the courts at Westminster. Being however seldom regulated by any printed or written rules, their practice was very ill defined, though in some few instances rules have been prepared and published, after approval, by the judges of assize. Suits were generally commenced, in case of serviceable process, by summons, and of bailable process, by *captias*. As regards the times of the returning of process, and consequently the period of obtaining judgment, the practice has been various. In many courts, precepts in the nature of writs were returnable, and the other steps in the cause were taken, weekly; in others, only every fortnight or three weeks. In contested cases, judgment could be obtained in few under six weeks; in general the period was longer. In some boroughs, as Bridgewater, they had adopted the short and improved forms of pleading promulgated by the courts of common law. In some the process was by *distringas*, or distraint of the defendant's goods, and *venditioni exponas*, or exposure to sale, in cases where the debt exceeded 40s. This was generally founded on affidavit of the debt; but at Berwick it issued without affidavit when the demand was under 15*l.*, and at Lancaster when it was under 40*s.* At Preston, burgesses were exempt from this process. Several courts, as in London, Bristol, and Exeter, have had the custom of *foreign attachment*, by which a plaintiff may distrain the goods of his debtor in the hands of a third party within the borough, and in default of appearance, cause them to be applied in satisfaction of his debt. In Lancaster, only the goods of non-freemen could be thus attached. This custom, where existing, has been extensively used.

Defects of the Judicial Organization in general.—The corporate magistrates were often selected from a class incompetent to the discharge of judicial functions. The magistrates of one borough (Malmesbury) were often unable either to write or read; and at another, having extensive and exclusive jurisdiction, they have been known to sign blank warrants. Even where they have belonged to a superior class, they were often selected from the senior aldermen only, who, from age and infirmity, soon became incapable of performing the duties of their office, while a mistaken notion of dignity kept them from resigning it. All these evils were heightened by gross defects in other parts of the judicial system. The juries of the borough courts were often taken exclusively from the freemen, who, besides being of an inferior class, were strongly tainted with party-feelings. At Carmarthen, for instance, the commissioners show that verdicts were frequently given against justice, from party bias; and at Haverfordwest, where juries could only be impanelled from the freemen, they had been openly reprimanded by judges and magistrates for improper acquittals of burgesses on criminal prosecutions; and the general opinion was that it was 'impossible to convict a burgess.'

Closely similar were the defects in the administration of civil justice. The vicious consequences of the union of incompatible functions in the person of the town-clerk we have already pointed out. Here, too, the juries were often chosen from the same objectionable class as in the criminal courts; at Portsmouth they were selected by one of the serjeants-at-mace, chosen out of two by the plaintiff's attorney; at Chichester they were summoned by an officer who was

one of the four nominal attorneys in court, the real attorney in the cause having the power of selecting the nominal attorney. The sergeants-at-mace and other ministerial officers of the court, exercising the functions of sheriff, were often persons whose pecuniary responsibility was inadequate to afford any security to the suitors. The costs of a suit were in general very considerable: those of a plaintiff often varying from 15*l.* to 20*l.*, of a defendant from 8*l.* to 12*l.*

The whole system of costs and fees was objectionable; there was generally no authorized table of them, and frequently no well-defined practice; they were most commonly in the town-clerk's discretion, though in some places taxed by the mayor; they bore little relation to the services in respect of which they were paid, and no reasonable proportion to the average value of the matter in question. One cause among others which led to the disuse of these courts was the want of professional skill in the judges. Nor can we doubt that the intimacy which must often have necessarily subsisted between the judge and the parties appearing before him, was one source of disinclination to resort to these tribunals, at which a few minutes would convert the tradesman and the customer into the judge and the suitor. Another reason was, the facility of removing the causes, and the general inclination of legal practitioners to sue in the superior courts. When a plaintiff had procured execution, he could use it only within the limits of the local jurisdiction; hence his process was often fruitless, the defendant removing himself and his goods beyond the limits of the court. The unlimited power of imprisonment possessed by these courts was in some instances very oppressively exercised.

One general observation remains to be made on the judicial powers lately exercised by the municipal corporations of England and Wales. Their extent was wholly disproportioned to the importance of the town or the probable respectability and intelligence of its magistrates. In Bath, for instance, with a population exceeding 50,000, no felonies could be tried, but all must be sent to a distance varying from eighteen to fifty miles; while in Winchelsea, with a population of only 772, and in Dunwich, with only 232, the jurisdiction included capital felonies. Nor was the condition of concurrent or exclusive authority more correspondent to the relative importance of the respective places, or to the principles of expediency arising out of their situation and their means of communicating with the seat of county jurisdiction. The grant of exclusive power seems either to have depended entirely on accident or caprice, or to have been determined by circumstances which have long ceased. Many corporations have disused the jurisdiction conferred by charter; generally from unwillingness in the corporate magistrates to undertake the responsibility attending its exercise. On the other hand, many of the evils above enumerated in the administration of criminal and civil justice have resulted from the continuance of jurisdiction after the decay of the borough. In many instances, the limited population has precluded the possibility of finding competent persons to act as magistrates, even in petty sessions, although a sufficient number might be found capable of superintending the police, and the paving, lighting, &c. of the town. Even in the more important boroughs, great injustice resulted from intrusting the powers of sitting as magistrates in quarter-sessions, and as judges of civil procedure, to persons without professional knowledge and experience.

Notwithstanding all the defects of the local civil courts, the commissioners bear marked testimony to the general desire of the inhabitants for their continuance or revival. 'Any system,' say they, 'which would have the effect of distributing justice where the parties interested reside, would be regarded as one of the greatest boons which the legislature could confer.'

Borough Courts under the Reform Act of 1835.

Criminal Courts.—After the 1st of May, 1836, all criminal powers and jurisdictions whatsoever, and however granted to any corporate or chartered officer or justice in any borough, and all right to elect or nominate any justice of the peace for the borough, or to act as such, other than as is provided in this act, are to cease. But any court now held in and for any borough may be held as usual, till the 1st of May, 1836. On the passing of this act, all claims whatsoever by boroughs, or their freemen or inhabitants, of exemption from the jurisdiction of the Court of Admiralty, or of possession of any such local admiralty jurisdiction,

however granted, are repealed—except the jurisdiction and office of the lord warden as admiral of the Cinque Ports.

Once in every quarter of a year, or oftener, at his discretion, or at his majesty's direction, the recorder is to hold a court of quarter-sessions for the borough, of which he is to sit as sole judge. It is to be a court of record, and have cognizance of all crimes, offences, and matters cognizable by any county court of quarter-sessions, the powers of which the recorder is to possess. But he is not to make or levy any county or similar rate, or to grant tavern licences, or exercise any of the powers specially vested in the council. In the absence of the recorder and deputy recorder, the mayor is to open and adjourn the court of quarter-sessions, at the proper times, and to require recognizances until a further day, to be proclaimed by him; but the mayor is to have no power to act as judge, or to do anything more therein than is above stated.

After the 1st of May, 1836, every person then committed for trial at any borough court, charged with any offence which the recorder will not then have jurisdiction to try, may be removed to the prison of the county, to take his trial at the next sessions or assizes.

Also, after the 1st of May, 1836, the justices of the county in which any borough, not having received the grant of a separate court of quarter-sessions, is situated, are to exercise full jurisdiction within such borough. But no part of any borough that shall have a separate court of quarter-sessions is to be within the jurisdiction of the justices of any county from which the borough was exempt before the passing of this act.

Every county gaol, house of correction, or lunatic asylum, court of justice, or judge's lodging, which at the time of the passing of this act was for any purpose taken to be within a county, is, for all such purposes, still to be so taken, although included within the limits of a borough as defined by this act.

Civil Courts.—In every borough in which, by charter or custom, there is or ought to be held a court of record for the trial of civil actions, not regulated by any local act, or in which, at the time of the passing of this act, a barrister of five years' standing did not act as judge or assessor, the recorder, or in his absence, or if there be not one, such officer of the borough as, by charter or custom, is the judge of the court, is to continue and act as such. The council, in every case, is to have the power of appointing the necessary officer, if he be not the recorder; and every such judge or assessor, except he be the mayor, is to hold his office during good behaviour. And he is to hold his court at such times and places, and with such rules of practice, and with the same powers and jurisdiction, as before the passing of this act.

The authority of any such court, in which a barrister of five years' standing shall act as judge or assessor, is to be extended (if it have not already such authority) to the trial of actions of assumpsit, covenant, debt by specialty or on simple contract, trespass or trover for taking goods and chattels, if the damages sought shall not exceed 20*l.*, and of ejectment between landlord and tenant where the annual rent shall not exceed 20*l.* without any fine. And any such judge may make rules, from time to time, for regulating the practice of his court, which rules are not to be in force till allowed and confirmed by three or more judges of the superior courts of common law at Westminster. The jurisdiction of such court is to extend to the bounds of the borough under this act. But no action is to be tried by any such judge, wherein the title to land or any other tenure, or to tithe, toll, market, fair, or other franchise, shall be in question, in any court which, before the passing of this act, had not authority to try actions respecting such titles.

The council of every borough in which a court of record as above shall be held is to appoint a registrar, except where the town-clerk acts as registrar, and other officers and servants to carry on the business and execute the process of the court.

Juries.—Every burgess of a borough having a separate court of quarter-sessions or of record is to be qualified and liable to serve on grand juries, and on juries for the trial of issues in such court (unless exempt or disqualified, otherwise than in respect of property, under the Act of 6 Geo. IV cap. 50). But no person is to be summoned as a juror oftener than once in one year. The burgesses of every borough having a separate court of quarter-sessions are to be exempt from serving on juries at any sessions for the county. After the passing of this act, no person in any

borough is to continue exempt from serving on juries by virtue of any grant, charter, or other special exemption; and so much of the Act of 6 Geo. IV. cap. 60 as continues such exemption is repealed.

Fees.—The council of every borough which shall have a separate court of quarter-sessions, or a commission of the peace, or a court of record, are to make and settle, within six months after their election, a table of fees to be taken by the clerk of the peace, the clerk of the justices, and the registrar and officers of the court of record; and such tables are to be submitted to one of the secretaries of state, to be conformed with or without alterations, as he shall think proper. The council may from time to time make new tables to be conformed, as above directed.

Penalties and Prosecutions.—All penalties recoverable in a summary manner, and by any act made payable to the king, to a body corporate, or to any person whatever, except it be the informer or some party aggrieved, are, if recovered before any justice of a borough having a separate court of quarter-sessions, to be adjudged to be paid to the treasurer on account of the borough fund, and to no one else; exception being made of all penalties or forfeitures recovered under any act relating to the customs, excise, or post-office, to trade or navigation, or to any branch of the king's revenue. The prosecution for any offence punishable on summary conviction under this act must be commenced within three months after its commission.

The justices before whom any person shall be summarily convicted are to cause the conviction, under their hands, to be drawn up according to a form prescribed in this clause of the act; setting forth the names of the justices, with the date and place of the conviction, the name of the offender, with the time, place, and nature of the offence, the amount of the penalty, and the time fixed for its payment to the treasurer of the borough. It is expressly enacted that all offences committed against any bye-law or regulation made by virtue of this act, are to be punishable on summary conviction in like manner. Provision is made for appeal from such conviction to the next court of general or quarter-sessions that shall be held after the lapse of twelve days, and for the offender's liberation in the interim, on entering into a recognizance with a sufficient surety to appear personally at the sessions. But no conviction, order, warrant, or other proceeding by virtue of this act is to be quashed through mere informality, nor removed into any of the courts at Westminster.

Gaols.—In nearly all the boroughs having criminal jurisdiction are gaols which have been under the superintendence of the corporation or the municipal magistrates. Their expenses were defrayed, in some cases, from the corporation funds; in others, from a borough-rate; in others, from the poor-rate. In many boroughs the same gaol was used indiscriminately for criminals and for prisoners committed by the civil court. In some few the poor debtors, while confined, received a small allowance from the corporation. In those where the municipal magistrates committed to the county gaol, the borough gaols were used only for temporary detention. Sometimes prisoners were committed at once to the county gaol until trial, brought back for trial to the borough sessions, and finally sent again to the county gaol to undergo their punishment. But debtors taken under process from the civil court must remain in the borough gaol.

Defects, &c.—The state of the borough gaols has furnished additional proofs of the evils of continuing the late constitution of the local tribunals. They have rarely admitted of any proper classification of the prisoners. In some large towns, as Berwick, Southampton, and Southwark, they were found in a very discreditable condition: in many of the smaller ones, they were 'totally unfit for the confinement of human beings,' often without sufficient air and light, frequently mere dungeons under the town-hall. In such receptacles it was impossible to set a prisoner to work, or to separate the criminals from the debtors. Felons might often be committed to the county gaol when the borough gaol was in an unfit state; but as this power did not extend to prisoners committed from the civil court, debtors might be lodged in places of confinement thought unfit for the reception of criminals. It was frequently stated to the commissioners that the gaol of the borough was in so notoriously improper a state for receiving prisoners, that plaintiffs were unwilling to consign to it defendants against whom they had obtained execution. At one place the same

feeling was said to prevent the prosecution of criminals. Where the corporate bodies have had the means of improving the state of the gaols, their neglect, as the commissioners remark, admits of no palliation; but many, they state, were unable to defray the expense of more suitable places of confinement—another illustration (we may observe) of the evil of perpetuating the machinery of local judicature in a town too decayed to support it.

The new municipal system is calculated to obviate the flagrant and often revolting evils of the old regulations respecting borough gaols and committals. It makes uniform provision for the transfer of prisoners to the county gaol when destined for trial at the county sessions or assizes; and such of the boroughs as are too inconsiderable for the due support of a local court and prison will now be brought entirely under the county jurisdiction. To facilitate the providing of more commodious places of confinement, it is directed in the act, that if it be satisfactorily shown to one of the secretaries of state that there is in any other borough a gaol or house of correction fit for the confinement of prisoners, the municipal council may contract respecting them with the parties having control over them, as they may wish the justices of the county; also, to prevent another of the inconveniences which we have indicated above, that of the repeated removal of prisoners, if the borough containing such prison have likewise a separate court of quarter-sessions, offenders committed to such prison may be there tried and sentenced for all offences of which the court has cognizance.

Coroner.—Under the old borough system the exercise of the important and delicate office of coroner was most defectively provided for. In many boroughs the mayor or other head of the corporation was coroner *ex officio*, in others the bailiff or town-clerk. When a separate officer was appointed to this function, the election was generally in the common council. His duties and his emoluments were the same as those of a county coroner. In most places he was not required to be either of the legal or the medical profession, and often he was an inferior tradesman.

Henceforward, the council of every borough wherein a separate court of quarter-sessions shall be held, are, within ten days after receiving the grant of holding such court, to appoint a fit person (not being an alderman or councillor) to be coroner of the borough, who is to hold the office during good behaviour. The council are also to fill up any vacancy in it occasioned by death, resignation, or removal, within ten days after it shall have occurred. No one is to take any coroner's inquisition within such borough but the coroner of that borough. For every inquisition he is to receive 20s., as also 9d. for each mile above two that he shall travel from his residence to hold any inquest, to be paid out of the borough fund. He is to transmit to one of the principal secretaries of state on or before the 1st of February in every year, a return in writing of all the cases in which he may have been called upon to hold an inquest during the year ending on the 31st of December preceding. But in any borough in which no separate quarter-sessions shall be held, no person is to take any coroner's inquisition but the coroner for the county or district in which such borough is situated, who is to be entitled to such fees and salary as would be allowed for any other inquisition taken by him within his own county.*

In the view which we have here taken of each distinct feature of the municipal system, both as it has been, and as it is to be under the Reform Act of 1835, we have sought to compare and contrast, as far as our limits would permit, the internal state of the boroughs as it lately was with that which they will assume when the new regulations shall be brought into full operation. To complete our historical view, it remains for us to notice briefly the principal steps of transition by which this entire change is to be arrived at.

The provision of the act which will the longest retard the complete extinction of the old system is that which regards the reservation to a certain extent of the *incubate* or latent rights to the acquisition, or the conveyance by marriage, of the old borough freedom. These rights, by birth, marriage, and apprenticeship, present or latent, are reserved to all persons having any share in them at the dissolution of the old corporations, in so far as regards their claim, by charter, law, or custom, to a portion in the real and personal estate, the rents and profits of any borough, or in any cha-

* For the regulations made by the act as to the local limits of jurisdiction of the justices, courts of quarter-sessions, and coroners, of the *United Kingdom*, see *Orange Papers*.

ritable trusts, the benefit of which latter was in many instances exclusively appropriated to the freemen, their widows, or children. But, before the proceeds of any such property are so divided, it is directed that the interest of all lawful debts chargeable upon it, the salaries of municipal officers, and all other lawful expenses that on the 5th June, 1835, were defrayed out of it, shall be discharged. In like manner every person possessing, on the 5th June, 1835, any such active or inchoate title to freedom, is to have the same exemption as formerly from any borough tolls or dues, provided that he pays any sum of money which, in consideration of his freedom or of any such right, he would, on the old system, have been liable to pay, and fulfils every other condition heretofore required, as far as is consistent with the provisions of this act. But all other exemptions from municipal tolls or dues, and the exclusive rights of trading which existed in many boroughs, are at once abolished.

The reservation of the freemen's title to the parliamentary franchise, included in the Parliamentary Reform Act of 1832, is distinctly maintained in the Municipal Regulation Act.

In anticipation that the several provisions of this act could not be carried into effect in the first year (1835), within the periods fixed in the act itself for that and all succeeding years, one of its clauses empowered the king in council to appoint, for the first year only, any other days before the 1st of February, 1836, in lieu of those named in the act for the several stages in the introduction of the new system; accordingly, the times for the several proceedings in question, as regards the *first year only*, have been, by order in council, extended about two months respectively. The following table will be found useful, as exhibiting in one clear, compact, and chronological view, each separate stage of the proceedings under the new system, with the precise date of each for the first year, in comparison with that fixed by the act for all following years.

Dates fixed by Orders in Council as to first Year's Proceedings.	Dates fixed by the Act as to the subsequent Years.	Nature of Proceeding.
Nov. 7, 1835	Sept. 5, annually	Overseers to make out Lists of Burgesses, and deliver the same to Town-clerk.
Between 7th and 17th Nov. 1835 Week preceding Nov. 17, 1835	Between Sept. 5 and 15, yearly Week preceding Sept. 15, yearly	Overseers to keep Lists of Burgesses for perusal, gratis, on demand. Lists to be fixed up by Town-clerk at Court House.
Nov. 17, 1835	Sept. 15, yearly	Last day of claiming or objecting—Claims must be sent to the Town-clerk. Notice of objections must be given to the Town-clerk, and also to persons objected to, or left on premises rated.
Eight days before Dec. 1, 1835	Eight days before Oct. 1, yearly	Lists of claims and objections to be made by Town-clerk and fixed up at Court House, and Town-clerk to keep copies for perusal, and sell the same for 1s. each.
Between Dec. 1, and Dec. 15, 1835	Between Oct. 1 and 15, yearly, commencing Oct. 1, 1835	Lists to be revised after three days' notice; first year by Barristers, and in subsequent years by Mayor and Assessors of the Mayor's Ward.
Dec. 15, 1835	Oct. 15, yearly	Revision of Lists to be completed, signed, and delivered by the Revisers, to the Town-clerk.
Dec. 22, 1835	Oct. 22, yearly	Alphabetical Ward Lists to be made out by Town-clerk, and to take effect from Nov. 1, yearly.
Dec. 26, 1835	Nov. 1, annually	Councillors to be elected; one third annually to vacate office.
Dec. 29, 1835, two o'clock	Nov. 3, annually, two o'clock	Mayor to publish Lists of persons elected Councillors.
Dec. 31, 1835	Nov. 9, 1835	Aldermen to be first elected, and then one-half triennially
Jan. 1, 1836	Nov. 9, yearly	Mayor to be elected.
Jan. 1, 1836	Nov. 1, yearly	Sherrifs in certain Towns to be appointed.
Jan. 1, 1836	Nov. 9, yearly	Town Councils to meet at twelve o'clock, and quarterly afterwards, except on Special Summons.
Jan. 1, 1836, Town-clerk, Treasurer, and Officers to be appointed.		
March 1, yearly, commencing 1836		Two Auditors to be elected for each Borough, with two Assessors in Boroughs not Warded; and two Assessors for each Ward in Boroughs divided into Wards.
May 1, 1836		Power of present Justices to cease—also present constitution of Sessions to cease, and Council may petition for a grant of power to hold Sessions; and within ten days after such grant made, Coroners to be appointed by Council, and Recorder to be the sole Judge at Sessions in future.

As regards the ceasing of the old offices and the commencement of the new, it is directed that, after the first election of councillors under this act, the mayor, aldermen, and all other members of the old governing body of the bo-

rough, as named in the schedules to the act, by whatever style they may be designated, are to go out of office, and their whole powers and duties are to cease; but any of them may be elected according to the new regulations. Every person holding, on the day of the passing of this act, any office, a new election to which would by statute, bye-law, charter, or custom, have taken place between that day and the 1st of May, 1836, is to continue to hold such office, with all its duties and emoluments, until the time provided by this Act for his going out of office. Every bailiff, treasurer, or chamberlain, and every other ministerial or executive officer who shall be in office at the time of the first election of councillors, may be removed by the council, but is to continue in office and be paid as heretofore until he shall be removed or re-appointed under the Act. He must deliver up and account for all corporation property in his possession to the council, who, in default, are to have the same remedy against him as against their own officers. Persons who, in any borough scheduled in this act, were justices of the peace under the old system at the time of its passing, are to continue to act as such until the 1st of May, 1836, but no longer.

Every paid officer of a corporation whose office shall be abolished, or who shall be removed from it under this Act, is to receive adequate compensation from the borough fund, the amount to be fixed by the council, who in so doing are to have regard to the manner of his appointment, his term or interest in it, and all other circumstances of his case.

Of the 246 municipalities which the commissioners state in their General Report to be existing in England and Wales, about sixty-seven of the more inconsiderable still remain to be legislated upon; the criminal and civil jurisdictions of which it will doubtless be deemed expedient to abolish, although the most eligible course to be adopted in dealing with their other franchises and their property may furnish matter for mature deliberation. London, as we have already remarked, is reserved to be the subject of a separate bill. And as regards the large or considerable unincorporated towns (including most of the new parliamentary boroughs created by the Reform Act of 1832), a clause of the Municipal Act of 1835 recites that 'sundry towns and boroughs of England and Wales are not towns corporate, and it is expedient that several of them should be incorporated; and enacts, that if the inhabitant householders in any town or borough in England or Wales shall petition the king to grant them a charter of incorporation, it shall be lawful for him, if he think fit, by advice of his privy council, to extend to the inhabitants of such town or borough, within the district to be described in the charter, the provisions of this act. Notice of such petition however, and of the time when it is to be taken into consideration by the privy council, is to be published by royal proclamation in the 'London Gazette,' one month at least before such time.

We have now traced the history of the boroughs of England and Wales, which has recently acquired so fresh and strong an interest, up to the time at which we write. It is not for us here to speculate at large upon its future course. That it will be marked by a steady advance in political and social amelioration there is hardly room to doubt. The decided reflux of that political tide which had so long been setting towards the sacrifice of all sound internal organization to the immediate material interests of individuals, of parties, and of classes, wielding the executive powers or sharing in the patronage of government, we have already had occasion to note. The days when that equal and salutary municipal organisation to which the instincts of a free community must ever tend, could be made the mere sport of irresponsible 'prerogative,' it may safely be asserted, are gone for ever in England. It is now the province of the legislature alone to mould by external authority the internal arrangements of each municipal commonwealth; and notwithstanding the instinctive bias of a large majority of the hereditary house of legislature towards the discouraging and shackling of the practice of election—notwithstanding their indulgence of this bias in the important changes which they have made in the bill of municipal reform sent up to them by the representative house—yet the beneficial groundwork of that original measure—that which affords a basis for all further improvement—the practical application of the principle that the primary object of a municipal constitution should be the immediate local security and convenience of the whole resident community, remains unimpaired. The towns of England being even now in the state of transition from the

old municipal order to the new, it is not for us to estimate with what degree of uniformity or rapidity that local and general good shall result which we so confidently anticipate. But this we will venture to predict—that as, in former days, municipal corruption was found to be the grand inlet to parliamentary subserviency, so municipal regeneration, by promoting civic virtue, activity, and intelligence, among the inhabitants of towns, thus brought to exercise a free voice, and take a lively interest in the operations of their local government, will eventually accelerate the thorough infusion into the representative house itself, of that steadily popular and independent spirit which alone can give the highest usefulness and stability to the government of a great empire in an age of general and advancing political information.

BOROUGHS OF SCOTLAND. The social principles of our nature must have manifested themselves here as in other countries; and villages, towns, and cities must have risen into existence wherever there were strength for protection, resorts for devotion, or peculiar facilities for trade and commerce. But the early history of the Scottish communities is involved in much obscurity, and it is not till about the twelfth century that we have a steady and continued light of record to guide us. We then find various places denominated 'burgi' or burghs, and some with that term as a component part of their name, as Edinburgh, Roxburgh, Jedburgh, Musselburgh. The towns now mentioned will also illustrate the condition of the Scottish burghs, some being the property of the sovereign, and others, as Musselburgh, the property of a subject. Musselburgh belonged to the church, and from the territory on which it stood being erected first into a barony, and afterwards into a regality with exclusive jurisdiction, it was successively a burgh of barony and a burgh of regality. Other communities were mere villages, but some, like Berwick, were raised from that and higher conditions to be burghs of the king in demesne. The burghs were at this time the property of the sovereign or other lord, and disposed of accordingly. Thus in the munificent grant by King David to Walter son of Alan, steward of Scotland, Renfrew was included. So the burgh of Dundee was bestowed by William the Lion on his brother David Earl of Huntingdon, who also received a grant of Inverberrie from the same monarch, as Cospatrick Earl of Northumberland received a grant of Dunbar from King Malcolm IV. In like manner King Malcolm IV. bestowed on the steward of Scotland, by grant, a portion of land in every royal burgh in the kingdom as a place of residence; and we find that the constable of Scotland had likewise, of right, a tenement in each of the royal burghs, derived no doubt in a similar way.

The following series of the royal boroughs of Scotland has been made by Chalmers (*Caledonia*, vol. i. p. 775), as they successively appeared to him in charters. Under Alexander I., Edinburgh, Berwick, Roxburgh, Stirling, Inverkeithing, Perth, and Aberdeen; the three last of which obtained their respective charters from King William the Lion. Under David I., Jedburgh, Haddington, Linlithgow, Rutherglen, Renfrew, St. Andrews, Dunfermline, Crail, Elgin, Forres, and Inverness. Under William, who granted many charters to burghs, Dumfries, Lanark, Glasgow, Irvine, Ayr, Forfar, Dundee, Arbroath, Montrose, Inverury, Kintore, Banff, Cullen, and Nairn. Under Alexander II., Annan, Dumbarton, Dingwall, and Rosemarkie. Under Alexander III., Kinghorn, Peebles, and Selkirk. Under Robert I., Kirkcaldy, Queensferry, and Lochmaben. Under David II., Cupar, Inverberrie, Dunbar, Brechin, Lauder, and Wigton. Under Robert III., North Berwick and Rothesay. Under James II., Kirkcudbright. Under James III., Kirkwall. Under James V., Pittenweem, Burntisland, and Dysart. Under James VI., Anstruther Easter and Wester, Culross, Wick, Sanquhar, and Stranraer. Under Charles I., Dornoch, Inveraray, New Galloway, and Newburgh. Under Charles II., Tain, Cromarty, and Kilsenny. Under William III., Campbeltown. This list however must not be taken as perfectly accurate, and indeed Chalmers himself furnishes materials for its correction. Thus Lanark is placed under the reign of William the Lion, but in the third volume of the *Caledonia* we find the author saying, 'it was certainly a royal town as early, at least, as the reign of Malcolm IV., who in granting a toft in Lanark, says it is *in burgo meo*.' (*Caledonia*, vol. iii. p. 607.) On the other hand, he tells us (vol. ii. p. 858) that Queensferry, though long a port, was not a burgh so late as 1556.

The most antient existing charters to the boroughs of

Scotland are, for the most part, grants or confirmations of particular privileges to the burghs, and do not, any more than the early charters to the towns of England, contain words of incorporation: so it would appear that the most artificial stage in the progress of the boroughs had been already passed, namely, that of their erection into bodies corporate, if indeed the mere association of the inhabitants had not in those days this effect. Nay, the earliest royal charter on the subject yet discovered is not of a local but of a personal and ambulatory nature. It is by King Malcolm IV. 'to the burghesses of the Bishop of St. Andrews,' and confirms to them all the liberties and customs which the king's own burghesses have, 'per totam terram meam, et quibuscunque portibus applicuerint.' (Connel *On the Election Laws*, p. 470.) The charters are however generally of one description, and convey to the burgh and burghesses, or to the burghesses of the burgh, the privileges mentioned in the deed. The usual privileges are, that their goods shall be free of toll or tribute, that they shall not be distrained but for their own debts, and that they shall have a certain market. Other privileges are sometimes conferred, such as the right of a merchant gild. These privileges were not confined to the royal burghs; similar concessions were granted by the sovereign to the burghs of subjects; and they in their turn imitated the royal example, and, like the monastery of Dunfermline, to 'our burghesses of Dunfermline and their heirs for ever,' confirmed or bestowed various mercantile privileges.

The antient foundation of burghship appears to have been possession of a tenement of land within burgh. An exception was early made in favour of a son not yet formalized, and this was subsequently extended in various directions, but the prime qualification was property. Every person who thus became a burghess swore fealty to the king and his bailies and the community of the burgh, and became bound to pay to the king a certain annual sum *sc.* and to watch and ward his land. The *borough mill* thus due to the king formed a considerable part of the royal revenue, and it was the duty of the great chamberlain of the kingdom to take account of their payment. The other principal source of the royal revenue from the burghs were the customs, great and small; and every town, at least those holding of the crown, had its *customarius*, who levied the customs and paid them over to the chamberlain, under deduction of course not only of accustomed charges, but also of sums directed by royal precept to be paid out of the customs or firms of the borough*. About the beginning of the fourteenth century the kings of Scotland adopted the method which had been followed in England, of granting feus or perpetual leases of the boroughs and of the petty customs to the communities of these boroughs, in return for which they stipulated a fixed annual reddendum of money. This of course caused a change in the form of the royal charters granted to boroughs; which, instead of concessions of particular mercantile privileges, began then to take the form of regular feudal grants of the town in fee-farm to the burghesses and community for a money reddendum. King Robert Bruce seems to have been the first of the Scottish monarchs who adopted this practice, and his example was followed not only by his royal successors, but also by the monasteries and lay nobles towards their burghs. On the accession of King James I. however, probably from an idea that such grants, and grants of pensions and the like out of the customs and rents of burghs, were prejudicial to the revenue, an act was passed annexing the customs and borough mailles to the crown for the king's maintenance; and by a statute passed in 1597 all alienations, assedations, and pensions of the annexed property, and especially of the customs, made before lawful dissolution (*disannexation*) in parliament, were declared null. But neither of these statutes appear to have interfered with the method of granting royal charters to the boroughs, and it is certain that the monasteries continued as before to feu out their boroughs.

In early times no difference seems to have existed between the privileges granted by the crown to the king's own burghs and those so granted to the burghs of subjects. Thus King David I. granted to the canons of Holyrood a charter in which he allowed them to build a town between their church and his borough of Edinburgh, and the burghesses were enabled by him to buy and sell and traffic as freely and fully as his burghesses of Edinburgh. So Dum-

* It was long usual to direct the royal pensions to be paid in this way, and we have already seen an instance in the case of Hector Boece.

barton was made a royal borough by King Alexander I.; yet the same king, twenty years afterwards, granted a charter to the Bishop of Glasgow, allowing his burgesses and men to trade within Argyle and Lennox as freely as they had done before Dumbarton was made a royal burgh, and without any hindrance from the bailies of Dumbarton. By various acts of the Scottish legislature also, mercantile privileges were conferred on the free boroughs generally without distinguishing whether they were boroughs of the crown or boroughs of barony or regality. However, by an act of the first parliament of King Charles I., the privileges of exporting merchandise, of using merchandise, and buying wine, wax, silk, and the like, and of packing and peiling were declared 'only proper and competent to the free burrows royal that have vote in parliament and bear burden with the rest of the burrows, and to no others;' and though its extent has since that time varied at different times, an exclusive monopoly is still enjoyed by the royal boroughs, and such of the other boroughs as accede to the terms on which it is communicable to them. When we find that it was so long before the monopoly of the royal boroughs showed itself, it may be thought strange to say that monopoly is the spirit of the system; but an account can easily be given for its late appearance: it could not appear till the influence of the papal church and of the lay nobility in favour of their respective boroughs had fallen, and the influence of the crown prevailed. But within burgh the spirit of monopoly reigned universally and from the earliest times. In almost all the boroughs minor associations are to be found, consisting of particular portions of the community asserting exclusive privileges. Of these the most antient is the guildry which appears in Scotland to have always designated properly an association of merchants. The artisans imitated the example of their merchant fellow-burgesses, and formed themselves into crafts, which, notwithstanding much opposition, at last obtained a legal establishment; they now exist in the towns of Scotland by royal charter, by seal of cause, and by prescription. And thus what the burghs were doing throughout the kingdom, the same were the burghal fraternities doing within the boroughs,—contending with each other and with all strangers to their communities for the monopoly of trade and manufacture. The burghal fraternities however went farther in their demands than their parent boroughs, and at length got also into their own hands the election of the borough magistrates and the administration of borough affairs.

When we recollect the crown's interest in the borough mailles and customs, and see the great chamberlain of the kingdom superintending the boroughs and levying the royal revenue there as the king's officer, we may conclude that the magistrates of the boroughs would, as his subordinate stewards, be nominated by the crown; and the term *ballivi*, by which the magistrates were usually described, as well as the practice adopted both on the continent and in England of presenting them to some of the king's great officers on their obtaining the magistracy, seem to countenance the idea. But whatever may be the quality of the evidence elsewhere, it is in Scotland, from the want of records, little better than conjecture. As early as the 'Leges Burgorum' the magistrates were elected at the Michaelmas head court, 'de consilio communi proborum hominum villæ qui sunt fideles atque bonæ famæ;' and in the borough of Aberdeen, where we have the oldest borough records extant, they were elected, prior to the year 1469, either by the whole burgesses or at least by the guildry. In the year now mentioned however an important change in the whole system of borough election took place, and a method of election was introduced which lasted nearly four centuries, and well nigh proved the ruin of the boroughs. By the act 1469, c. 30, 'Touching the election of officers in burrowes, as aldermen, bailies, and other officiares, because of great contention yeirly for the chusing of the samin, throw multitude and clamour of commounes, simple persons:* it is thought expedient that na officiares nor counceil be continued after the kingis lawes of burrowes, further than ane yeir, and that the chusing of new officiares be in this wise: that is to say, the auld counceil of the toune sall chuse the new counceil, in sik number as accordes to the toune; and the new coun-

cel and the auld, in the yeir foressaid, sall chuse all officiares pertaining to the toune, as alderman, bailies, dean of gild, and other officiares. And that ilk craft sall chuse a person of the samin craft, that sall have voit in the said election of officiares, for the time, in likewise yeir by yeir.'

As in England, so in early times in Scotland, there were certain borough courts at which all the burgesses were required to attend; the most eminent of which were the three head courts, similar to the courts of the same name without borough, where tenants owed suit to their lords. Here, as we have seen, the burgesses elected their magistrates, and the chief business of the borough was transacted. But these burgh courts soon fell into disuse: the attendance became narrower; the nomination of the magistrates came into the hands of a few persons, and the magistrates alone exercised burghal jurisdiction. This jurisdiction also became very ample, particularly in the royal burghs; in personal actions it was unlimited, and in possessory actions it was large: the magistrates could issue flight warrants and imprison debtors till they found bail; they had jurisdiction in *brives*, in sequestrations, and in the registration of deeds; they acted also as commissioners of supply and as justices of the peace; and their criminal jurisdiction extended in special cases to capital crimes; and of this jurisdiction the greater part still remains. For its due execution most of the boroughs have *assessors*, learned in the law; and the *dean of guild* and his council acquired civil powers and a maritime jurisdiction within borough. Several boroughs were also, as in England, erected into counties corporate, with a jurisdiction of sheriffship within themselves; such are Edinburgh, Stirling, Linlithgow, Perth, Inverness, and Forres.

The control of the magistrates, and generally of the whole affairs of the boroughs, particularly of the king's boroughs, was vested in the great chamberlain of Scotland, a high officer of the crown, who appears in the full exercise of his powers before the reign of King David I. in the twelfth century. This great officer held *ayres* or itinerant courts throughout the kingdom, at which the magistrates and burgesses of the several boroughs were bound to give attendance, and where the chamberlain heard and determined the various charges for breach of official or other duties brought against the magistrates and other officers, and also against the various classes of the inhabitants, such as butchers, bakers, brewers, and the like. He also levied the different revenues accruing to the crown from the boroughs, and investigated into the employment or disposal of the *common good*, that is to say, the lands and revenues belonging to the community of the boroughs. For about two centuries and upwards the office of chamberlain was mostly held by ecclesiastics; it afterwards came to be vested in the nobility and higher gentry; and at length in the beginning of the sixteenth century it ceased to be exercised in person. We shall have further evidence of this immediately; but here it may be noticed that though by statute so late as 1491, the common good of boroughs was directed to be inquired into yearly in the chamberlain-ayre, yet in less than forty years afterwards it was directed to be accounted for in exchequer; the chamberlain ayres having then, it is probable, ceased to be holden. They had certainly ceased in Aberdeen before that time, for in 1512 a large sum was raised by assessment from the inhabitants of that borough and paid to the crown for relieving it from the grievance, as the ayres were then considered. Another court held by the chamberlain ceased about the same time. This was the court of Four Boroughs, an antient court so called because composed of delegates from four royal boroughs, originally the boroughs of Edinburgh, Stirling, Berwick, and Roxburgh, but from the year 1368 (at which time the two last were in the hands of the English by conquest) the burghs of Edinburgh, Stirling, Lanark, and Linlithgow. These delegates were assembled yearly at Haddington before the chamberlain of Scotland, and formed for appeals from the chamberlain ayres and from the various borough courts of the kingdom, a tribunal which was to the inhabitants of the boroughs what the high court of parliament was to the other inhabitants of the realm, the last and highest court of appeal. The jurisdiction of this court was probably swallowed up by the court of session which was established in 1532; subsequent to that time we hear nothing of it. Before its disuse however it had given birth to an assembly which has continued to our own day. This was the parliament or convention of royal boroughs. In the year 1405, when the regent Robert Duke of Albany, uncle to King James I.,

* This expression, taken perhaps in its modern acceptation, caused considerable meriment in the debates of the House of Commons on the Scottish Reform Bill, by which the statute in the text was repealed. But we apprehend the phrase is to be taken as descriptive not of mental character but of a civil condition; and was employed, as in numerous other instances in our older writers, to designate the commonality as distinguished from the gentry, and so to be merely explicative of the preceding term in the act, 'commounes.'

was chamberlain of Scotland, and just before his resignation of the office in favour of his eldest son, a court of the Four Boroughs was held at Stirling, where it was resolved that two or three deputies from each of the royal boroughs south of the Spey should convene yearly with the court of Four Boroughs to consider and conclude on all matters affecting the common weal of the royal boroughs, their liberties, and court. No explanation has hitherto, we believe, been given of the circumstance that the boroughs north of the Spey were excluded from this assembly, any more than for the fact that boroughs so far south and so few in number, as Edinburgh, Stirling, Berwick, and Roxburgh, should have formed the court of Four Boroughs, though it is known that the north of Scotland had long been possessed by a trading and industrious people. But the fact is, that the burgesses of the north were enjoying their own *hanse*. So early as the reign of William the Lyon a royal charter was granted to the king's burgesses of Aberdeen, and of Moray, and all beyond the Grampians, to hold their free 'ausum' or hanse as fully and honourably as their predecessors had done in the time of the royal grantor's grandfather. (Kennedy's *Annals of Aberdeen*, vol. i. p. 8.) There appear to be no records extant of this northern convention; but there can be little doubt that it was with reference to it, if not in its imitation, that the convention of boroughs south of the Spey was formed. This latter assembly, though it was appointed to meet in the same place with the court of Four Boroughs, formed no constituent part of that court, and soon also disregarded both the time and place of meeting of that assembly; and in 1487, when probably the superior advantages of one general mercantile convention was perceived, deputies from all the boroughs 'baith south and north' were by statute of that year appointed to meet yearly on the day named in the act at the borough of Inverkeithing, 'there to commoun and treate upon the wellfare of merchandise, the gude rule and statutes for the commoun profit of burrowes, and to provide for remeid upon the skaith and injuries sustained within the burrowes.' It was then that the chamberlain ayres were substantially superseded, and a foundation laid for the entire abolition of the office of lord chamberlain, whose place in the convention is now occupied by the lord provost of Edinburgh, who, though not a member, is yet its constant preses. The origin of this last circumstance is not to be met with in the books of the Scottish lawyers: but it appears to be this. The convention did not continue long to assemble at the antient yet little borough of Inverkeithing, but like the other supreme courts of Scotland removed to Edinburgh. This was so early as the time of Alexander Lord Home, who was appointed great chamberlain almost immediately after the passing of the above act of 1487; and as that person was at one time both lord provost of Edinburgh and lord chamberlain of the kingdom, and also, as it would seem, the last in the latter office who exercised its duties in person, hence no doubt arose the practice of the lord provost of Edinburgh being the permanent preses, and the town-clerk of Edinburgh the perpetual clerk of the convention. This civic parliament has continued to the present day, meeting annually at Edinburgh on the second Tuesday of July.

The precise time at which the royal burghs first sent representatives to the general parliament of the kingdom is uncertain. In the year 1326, when the tenth penny of all the revenues from land was yielded to King Robert Bruce, the burghs appear as a constituent part of parliament; but perhaps they did not continue permanently to do so till some time afterwards. After their admission the parliament consisted of the bishops, the barons, and the representatives of the boroughs, who all deliberated together in one house, in matters of subsidy as in other matters. After the union, when the royal burghs were appointed to send 15 representatives to the imperial parliament, Edinburgh sent one member, and the remainder of the boroughs were divided into 14 districts, each of which likewise sent one. The member for Edinburgh was chosen by the magistrates and council of the city. The other members were chosen in this way: each borough of every electoral district made choice of a delegate, and the delegates chosen met and nominated the member for the district. Thus, in all cases, the election of the member essentially depended on the magistrates and town councils, who were appointed in nearly all the boroughs on the system of *self-election*, introduced, as we have seen, by the stat. of 1469 - a statute, we then also remarked, which well nigh proved the ruin of the boroughs. No sooner was it passed than complaints began of partiality

and undue influence in the election of borough magistrates, and then of the dilapidation of the common good of boroughs for personal and party ends. These complaints appear in numerous statutes, and they were uttered by the executive government in Scotland—in the Scottish claim of right at the revolution—in applications of particular boroughs—and by the general convention of boroughs. Various motions were accordingly made in parliament on the subject, and commissions of inquiry appointed; but except the act 3 Geo. IV. c. 91, which limited the powers of feuing and contracting debt, no remedy of consequence was applied till the borough reform act of August, 1833, following on the act of July, 1832, to amend the representation of the people of Scotland in Parliament—by which last stat. 2 and 3 Will. IV., c. 65, the number of representatives to parliament from the Scottish boroughs was raised from 15 to 23, and the right of election enlarged and distributed anew. Three small boroughs were withdrawn from the list of parliamentary boroughs, and several places which had risen into importance were added to them: Edinburgh and Glasgow were allowed two members each; Aberdeen, Paisley, Dundee, Greenock, and Perth, one each; and the remaining boroughs and towns were associated into 14 districts, each of which returns one member. Instead also of the members being chosen, as heretofore, by the town councils, they are to be elected directly by the inhabitants as set forth in the Act, namely: 1. Every person not legally incapacitated, nor for twelve months in the receipt of parish aid, who shall have been in the occupancy as proprietor, tenant, or life-renter of any house or other building within the town, which, either alone or jointly (a) with any other building within the same limits, or (b) with any land therein owned or occupied by him, or occupied under the same landlord, shall be of the yearly value of 10*l.* sterling; 2. Every person not incapacitated or receiving aid as aforesaid, who is the true owner of premises within the town of the yearly value of 10*l.*, provided the party has resided for six months within seven miles of the town; 3. Husbands, in respect of premises owned by their wives, either in the lifetime of the wife or holding by the courtesy; and 4. Joint occupants of premises of 20*l.* and upwards may claim and vote, if the share or interest of each is 10*l.* This important statute paved the way for the other acts above alluded to, namely 3 and 4 Will. IV., c. 76 and c. 77, whereby the election of the common councils for the royal boroughs, and for boroughs not royal, but which now return or contribute to return members to parliament, was vested in the 10*l.* householders as already described, the councillors so elected choosing the provost and magistrates, except in the small boroughs of Dornoch, New Galloway, Culross, Lochmaben, Berwick, Wester Anstruther, Kilrenny, Kinghorn, and Kintyre, where the election of both magistrates and council is to proceed in the way and manner hitherto practised there.

To the preceding account of the boroughs of Scotland, we have not thought it necessary to add any observations on the authenticity of the 'leges burgorum,' an examination of the question would necessarily be extensive, and is no perhaps more of professional than of public interest.

(Chalmers's *Caledonia*, vol. i.; Connel *On the Election Laws of Scotland*; and *Reports of the Commissions of the House of Commons on the State of the Scottish Boroughs*.)
BOROUGH, IRISH. [CORPORATIONS (MUNICIPAL) OF IRELAND; COMMONS, IRISH HOUSE OF.]

BOROUGH-ENGLISH is a customary descent of lands or tenements, whereby, in all places where this custom holds, lands and tenements descend to the youngest son; or if the owner of land have no issue, then to the younger brother, as in Edmonton, some parts of Richmond, and other places, and the reason of this custom, says Littleton, is, for that the youngest son is presumed in law to be least able to shift for himself.

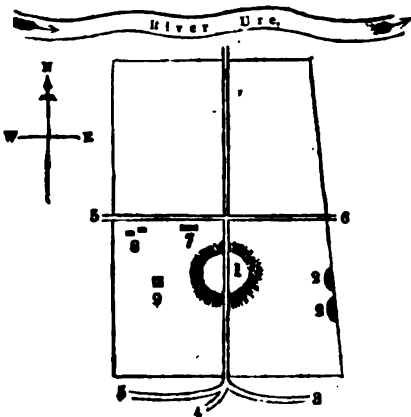
Blackstone, who divides the common law into three divisions, treats of Borough-English under the second division, viz. —'Particular customs, which for the most part affect only the inhabitants of particular districts.' In the first volume of the 'Commentaries' he gives a definition of the term similar to that contained in Dr. Cowell's Dictionary; and in the second volume he recurs to it, and observes — 'Other authors have indeed given a much stronger reason for this custom, as if the lord of the fee had antiently a right on her wedding-night; and that therefore the tenement descended not to the eldest but the youngest son, who more certainly the offspring of the tenant.' Blackstone.

however, states that he cannot learn that this right was exercised in England, although it certainly was in Scotland, until abolished by Malcolm III., and in some parts of France; and even if it were, the reason, as it regards the youngest son *only*, is obviously absurd. 'Perhaps (he adds) a more rational account than either may be fetched (though at a sufficient distance) from the practice of the Tartars; among whom, according to Father Duhalde, this custom of descent to the youngest son also prevails. That nation is composed totally of shepherds and herdsmen, and the elder sons, as soon as they are capable of leading a pastoral life, migrate from their fathers with a certain allotment of cattle, and go to seek a new habitation. The youngest son, therefore, who continues latest with the father, is naturally the heir of his house, the rest being already provided for. So that possibly this custom, wherever it prevails, may be the remnant of that pastoral state of our British and German ancestors which Cæsar and Tacitus describe.' But it is unnecessary to go so far for the origin of a custom which the name itself and other circumstances show to be of English origin.

BOROUGH-REEVE. [BOROUGH, page 194.]

BOROUGHBRIDGE, a m. t., bor., and t., in the par. of Aldborough, in the W. Riding of Yorkshire, and in the lower division of the wap. of Claro. It is situated on the S. bank of the Ure, over which there is a stone bridge. Pop. 950. It is about 205 m. N. by W. from London, being about half way between the metropolis and Edinburgh. It sent two members to parliament from 1553 to the time of the Reform Act, when it was disfranchised. Boroughbridge arose out of the remains of Aldborough, the ancient Iseur or Isurium, derived, according to Hutton, from Isis, a deity worshipped here, and Uer or Ure, the river on which the city stood. In accounting for the decay of Isurium (Aldborough) and the rise of Boroughbridge, Hutton remarks, 'The first depression Isurium felt was the removal of the royal residence from this city to York, in the days of Severus. The second calamity was the Danes burning the city to ashes in the eighth century; and the third, which completed her destruction, was turning the great north road, which ran through the centre, by removing the bridge. This made Boroughbridge a thoroughfare, and left Isurium desolate.' (Hutton's *Trip to Coatham*.)

This town was granted, together with Aldborough and Knaresborough Castle, to Hubert de Burgh in the fifteenth of Henry III.; but it was forfeited by his son for aiding Simon de Montfort at the battle of Evesham. Edward II. afterwards gave it to his favourite, Piers Gaveston. In 1321 a sanguinary battle was fought here between Edward II. and the discontented barons, headed by Thomas Earl of Lancaster, who was afterwards beheaded at Pontefract. Till very lately the manor was in the possession of the Duke of Newcastle, by whose ancestors it was purchased in 1701. The town and par. abound with antiquities, which are continually being turned up by the plough. In 1831 a beautiful tessellated pavement was discovered, which is the best in the place, if not superior to any in the kingdom. The most curious remains are perhaps the Arrows, which are at a short distance on the W. side of the town. The following sketch, with slight additions, is from Hutton, and will explain the situation of some of these interesting objects.



[Isurium.]

- 1, Borough Hill; 2, Ancient Walls; 3, Ermine Street; 4, Road to Knaresborough; 5, Road to Boroughbridge; 6, Old Road to York; 7, The Church; 8, Pavements; 9, The Pavement recently discovered

Many of the inhabitants have British and Roman antiquities to show and for sale;—small heads of brass, chains of gold, signet stones, urns, lamps, tiles, and coins. Some coins have been found of gold, and some of silver; but the greater number are of brass, and include those of the Emperors Augustus, Claudius, Vespasian, Domitian, Severus, Maximinus, Valerian, Aurelian, Diocletian, Constantine, Carausius, and Julian. The chief importance which Boroughbridge at present possesses is from its situation on the great north road, the ancient Ermine Street. It was formerly noted for its traffic in hardwares, but at present its principal business consists in the shipment of agricultural produce. The Ure is navigable as high as Ripon for small craft, and several warehouses connected with its commerce have been lately erected on the S. bank of the river. Boroughbridge communicates with Selby and Hull by the Ure and the Ouse; with Leeds, Wakefield, and the manufacturing districts, by the Ure, the Ouse, and the Aire and Calder navigation.

The chapel of ease is a perpetual curacy in the patronage of the vicar of Aldborough, and in the diocese of Chester. There is a national school for 100 children, established in 1814; and an infant school of recent date. The Methodists have a place of worship here. The town also supports a small subscription-library and news-room. The houses are neat and well built. In the market-place is a fluted Doric column; the market is held on Saturday, and is chiefly for corn; several fairs are held in the course of the year; that in June was formerly of great importance for the sale of hardwares, and lasted for a fortnight; it was attended by some of the principal manufacturers from various parts of the kingdom. It is still frequented by dealers from Sheffield, Wolverhampton, and Birmingham, and continues for several days; the other fairs are chiefly for cattle. (*Communication from Yorkshire*.)

BORROMEAN ISLES. [MAGGIORE, LAGO.]

BORROME'O, ST. CHARLES, son of Gilberto Borromeo, Count of Arona, Lord of Anghieri, &c., and of Margherita de' Medici, sister to Pope Pius IV., was born at Arona, in October, 1538. He studied at Pavia under Aleciati, and took his doctor's degree at twenty-two years of age. Shortly after, his uncle Pius IV. called him to Rome, and made him a cardinal and archbishop of Milan, and gave him all his confidence. Borromeo established an academy in the Vatican for the promotion of learning, and he published its conferences, under the name of *Noctes Vaticanæ*. He urged the Pope to hasten the termination of the Council of Trent; and upon its conclusion in 1563, he was commissioned to draw up an exposition of the doctrine of the Roman Catholic Church, as sanctioned by that council. This exposition is known by the name of 'Catechismus Tridentinus.' After the death of Pius IV., in 1565, Cardinal Borromeo went to his diocese, where he devoted himself entirely to his episcopal duties. He reformed his expensive style of living, and employed the greater part of his revenues in charitable purposes. He also enforced a reform in the clergy, especially among the monastic orders. The monks called Umiliati gave most scandal by their openly licentious conduct; and Borromeo having exerted himself to check their disorders, one of them made an attempt upon the life of the cardinal, by firing at him as he was praying in his chapel. The ball perforated his garments without hurting his person. The assassin, named Farina, was taken and executed, together with two of his superiors who had instigated the crime. Pope Pius V. suppressed the order, and applied their revenues to other purposes.

Cardinal Borromeo used to visit every part of his diocese, reforming abuses, examining the conduct of his clergy, and providing for the wants of the poor. He established colleges and schools, and asylums for destitute children. He held several provincial synods, the transactions of which are found in his *Acta Ecclesiæ Mediolanensis*, fol. 1599. When the plague broke out at Milan in 1576, he exerted himself, at the risk of his life, in assisting the sick, and relieving the wants of the population in that calamitous time. He was accused by his enemies of having overstepped the limits of his authority; and he had several disputes with the Spanish governors of Lombardy on matters of jurisdiction. In some particulars Cardinal Borromeo shared the errors and prejudices of his age, for we find that he believed in the existence of sorcery. His conduct, however, was exemplary; and his zeal for the flock committed to his care unremitting. He

died the 3rd of November, 1594. His body, dressed in his pontifical robes, is to be seen in a sarcophagus of natural crystal, in the subterraneous chapel of the cathedral of Milan. Charles Borromeo was canonized by Pope Paul V. in 1610. He has left many theological and ascetic works, homilies, and sermons, of which a catalogue is given by Mazzuchelli. Ripamonti and Bascapé have written his life.

BORROME' O, FEDERICO, the son of Giulio Cesare Borromeo, uncle of St. Charles, and of Margherita Trivulzio, was born at Milan, in 1564. He resided first at Bologna and then at Pavia, and afterwards went to Rome where he was made a cardinal, in 1587. He was both a classical and oriental scholar; and was intimate at Rome with Baronio, Bellarmino, and the pious philanthropist Filippo Neri. In 1595 he was made Archbishop of Milan, where he soon after made his entrance in the midst of public rejoicings and acclamations. He adopted the views of his cousin and predecessor St. Charles, and enforced his regulations concerning discipline with great success. He used to visit by turns all the districts, however remote and obscure, in his diocese; and his indefatigable zeal for the good of his flock, his charity and enlightened piety, are attested by Ripamonti and other contemporary writers, and have been lately again eloquently eulogized by Manzoni, in his *Promessi Sposi*. He was the founder of the Ambrosian Library, on which he spent very large sums; and he employed various learned men, who went about several parts of Europe and the East, for the purpose of collecting MSS. Oligiati was sent to Germany, Holland, and France; Ferrari to Spain, Salmazi to Greece, a Maronite priest, called Michael, to Syria, &c. About 9000 MSS. were thus collected. Cardinal Borromeo established a printing press, annexed to the library; and appointed several learned professors to examine and make known to the world these literary treasures. He also established several academies, schools, and charitable foundations. His philanthropy, charity, and energy of mind, were exhibited especially on the occasion of the famine which afflicted Milan in 1627-8; and also during the great plague of 1630. He died the 22nd of September, 1631, universally regretted, and was buried in the cathedral, near the monument of his cousin, St. Charles. Mazzuchelli gives a list of his printed works. He left also a number of works in MS.

BORROMINI, FRANCIS. Such is the injurious celebrity which this architect's caprices have obtained for him, almost rendering his name a synonym with bad taste, that it secures him a place in every work of general biography. Even the very excess of his merit and his capricious extravagance render him a sort of landmark in the history of the art, for both his works and his example deteriorated it to that degree as almost to create a distinct style. He was born in the district of Como, in the year 1599, and at the early age of nine was sent by his father, who was an architect, to study sculpture at Milan. After passing seven years in that city he proceeded to Rome, where his relative, Carlo Maderno, was then employed in finishing St. Peter's. On the death of Maderno, in 1629, although Bernini was appointed to succeed him as architect to that building, Borromini continued under him as he had done under his predecessor; yet, instead of the connexion thus established leading to any friendship between them, it only occasioned extreme jealousy—at least on the part of Borromini, who could not brook the superiority conferred upon one who was his senior only by a few months. He therefore endeavoured by all means to supplant him whenever occasion offered, and so far succeeded as to ingratiate himself with Urban VIII. Owing to the patronage of that pontiff, he was employed upon a variety of important works, most of which would have afforded ample scope for the display of architectural talent, had he not chosen to throw away the opportunities thus offered him. Instead of seeking to distinguish himself by showing that he was capable of turning his art to greater account than either his predecessors or contemporaries, he sought only to astonish by downright vagaries, and by caprices altogether at variance with every principle both of the art itself and of construction, altering and reversing members, and applying them contrary to all analogy, frequently in defiance of common sense. His designs are of the most heterogeneous description; nothing in them seems to have been dictated by either reason, propriety, or motive, for there is hardly any feature or part that might not just as well have been altogether different. Still, even some of those who have otherwise severely cen-

sured him, have allowed that he possessed fertility of invention and imagination; and certainly if those terms can be applied to the imagining all sorts of preposterous whims, they are not misapplied in regard to him. But the merely doing that which its very absurdity has probably prevented others from doing, is not invention, because invention, in the language of art, must be supposed to imply, that what it produces is not only new but commendable also. It requires no genius to produce mere monsters and monstrosities in art, such as are nearly all the productions of Borromini, whose buildings offer to the eye a mass of unmeaning confusion, and for the most part as ugly as unmeaning. To them may very well be applied the expression Vasari has made use of when he stigmatizes Gothic architecture as being *una maledizione di fabbriche*, and in fact what he says of that style will exactly serve to characterize that of Borromini; with this difference, that what the critic enumerates as so many vices produces consistency in the former, whereas the other has no consistency, nor exhibits any kind of principle. It must nevertheless be acknowledged that there are occasionally some happy random accidents—some glimpses and glimmerings of beauty and gracefulness in the productions of this architect; and indeed it would have been almost a miracle had he not, in the course of his numerous caprices, now and then, by mere chance hit upon some pleasing combinations, although only in detached parts.

It must also be allowed that so far from being deficient in constructive skill, he frequently exhibited an unusual degree of mastery in it; in fact, it required no ordinary ability to contrive the execution of some of his designs, because the supports are all disguised, and what ought to contribute to strength, required no little artifice to make it support itself. He appears to have been a man of perverse disposition as well as taste; for although he obtained great wealth, as well as fame—and of the latter far more than he was entitled to by his professional desert—he nourished such an envy of Bernini's superior reputation, that he at length fell into a state of hypochondria. In order to dissipate it, he made a journey through Italy, but on his return again to Rome shut himself up in seclusion, occupying himself solely in drawing whatever fantastic architectural ideas occurred to him, with the intention of having them engraved. But before the work was brought out, his disorder had increased to such degree as to render him nearly a madman; and it was perhaps increased by his attendants not permitting him to apply himself any longer to the studies which they considered the cause of his malady. One night when he was unable to sleep, and had ordered pens and paper to be brought him, he leaped out of bed and stabbed himself with a sword that happened to be hanging up in his chamber. This desperate act was committed in the year 1667, when he had reached the advanced age of sixty-eight. Such was the miserable end of a man, who, notwithstanding his career had been so eminently prosperous, embittered his own existence by allowing his morbid feelings to obtain the mastery over him. Setting aside his jealousy of temper and inordinate ambition, Borromini possessed many estimable qualities: he was generous and disinterested, and his morals were unblemished.

Among his principal works is the church of La Sapienza at Rome, which he was commissioned to execute by his patron, Pope Urban, and which bears ample testimony of his singularly vicious taste, both withoutside and within (the dome is formed externally by steps, and there is a spiral staircase placed above its lantern); the church of the College di Propaganda; the oratory of the fathers of Chiesa Nuova, which is perhaps one of his least faulty productions, after the church of St. Agnes; the façade of the Doria Palace, 'a building,' says Woods, 'monstrous in every sense, and yet in spite of its absurdity, the long range of similar windows loaded with enormous mouldings, and overcharged in all parts, produces an effect of great grandour, as seen obliquely in the narrow Corso.' However his church of San Carlino alle Quattro Fontane is generally considered his masterpiece of extravagance, chiefly perhaps on account of the waving lines and surfaces of its façade; not but that there is even stronger evidence of bad taste in other respects, and of a kind not easily to be described by words. Besides the above and a great many other works which it would be tedious to enumerate, he restored, or more properly speaking, modernized, the nave of San Giovanni Laterano, which, capricious as the parts and decorations are, has nevertheless something grand and im-

posing in its general character. It is not unlikely that even the absurdities and extravagancies of this architect carried along with them their own antidote; and after the mere fashion of the time had passed away, served by their very excess to lead to the rejection of such puerilities.

BORROWDALE, a valley in Cumberland, remarkable for beauty of scenery. Its lower boundary may be placed at the stream which forms the waterfall at Barrow, about 2 m. S. of Keswick. From Grange Bridge it runs S., tending slightly to the W., to the N. skirt of Scawfell, the nucleus of the Cambrian group of mountains. It is watered in its whole length by the river Grange, which takes its rise in two streams from Scawfell: one coming from Sprinkling Tarn, through Sty Head Tarn, the other descending from Esk Hause (the *slack*, to use a provincial term, or depression between Scawfell and Bowfell), which, with the bluff face of rock called Great End, forms the true termination of the great valley of Borrowdale. At the head of Borrowdale stands the Pikes, which is 3160 ft. above the sea. These streams, after their junction, form a powerful mountain torrent, which traversing Derwentwater, takes the name of Derwent after it issues from that lake. The level ground of the valley hardly begins before their junction; from which to Grange Bridge is about 6 miles. The breadth is very various. At the gorge where Castle Crag juts out into the centre of the valley, there is only room for the bed of the river; and this is one of the most beautiful spots in England: higher up the valley expands, varying in width from a quarter of a mile to a mile and upwards. Generally it is narrow, and the sides are lofty and abrupt: it is broadest at Rothwaite, where the main valley throws off a branch running E. by the hamlet of Stonethwaite. This again divides itself into two branches: one hardly more than a mountain ravine forms the small valley of Greenup, which is separated from Grasmere by a mountain; the other running nearly parallel to Borrowdale, is called Langstreth, a wild upland valley about 4 m. long, and in some places about $\frac{1}{2}$ m. broad, entirely devoted to pasturage, and terminated by Bowfell.

Borrowdale is a chapelry of the parish of Crosthwaite, and the living is a perpetual curacy in the gift of the vicar of that parish. The chapel, which was rebuilt and a little enlarged, about twelve years ago, is near Rothwaite. It is divided into four hamlets, Grange, Rothwaite, Seathwaite, and Stonethwaite. Borrowdale formerly belonged to the abbey of Furness.

The flat bottom of the valley contains about 2000 acres: there are about 800 acres of arable land, of which about 120 acres are ploughed annually. Hay is grown in the meadows; but in the upper valley it frequently is not housed before September, the climate being wet and cold. The mountain sheep-walks form the chief dependence of the farmer. There is a good deal of copse-wood, but very little timber in the valley; hazel-nuts are so plentiful as in good seasons to form an article of some account to the small proprietors. A sheep-fair is held on the first Wednesday in September. There is slate of good quality in the hill side opposite Castle Crag, but it has not been worked for upwards of 20 years. Formerly a quarry was worked on the top of that eminence; it is now we believe discontinued. Traces of fortification attributed to the Romans were formerly visible on it; but the combined effects of quarrying and planting have rendered it difficult to find them, and perhaps they are entirely obliterated. The most remarkable product of the valley is graphite, plumbago, or black-lead (provincially *wad*), which is found in one spot near the head of the valley, of quality far superior to any which has been discovered elsewhere. The population of Borrowdale was in 1801, 342; 1811, 310; 1821, 346; 1831, 356. They are almost exclusively employed in mining and agriculture.

There is a tolerably good carriage-road from Grango Bridge to the farm of Seatollar, between four and five miles; from thence to Seathwaite it is hardly practicable except for carts. From thence there is a horse-track across the well-known pass of Sty Head to Wasdale and the west coast. This, though scarcely passable except by the country horses (for the ascent from Borrowdale is very steep, and the descent to Wasdale Head is as steep and considerably longer, comprising probably not less than 1250 feet of perpendicular descent, the whole of which is seen at a glance), is more frequented than might be supposed, not only by tourists, but as the readiest means of communication between the central mountain district and the coast. Horses laden with heavy

packs of wool, &c., traverse it; and the path is kept in some sort of repair by the parishes. Two roads diverge from this main line; one a mere horse-path, leading by Stonethwaite and Langstreth over the high pass called the Stake, (which is hardly surpassed in grandeur even by Sty Head) to Langdale, and thence to Ambleside, or Coniston; the other, which is just practicable for light carts, from Seatollar to Buttermere. Both these routes are very beautiful. There is a small inn at Rothwaite, the only one in the valley.

Borrowdale belongs to the central division of the Cambrian slate formation, which contains the highest peaks and the most romantic scenery. The most remarkable objects in it, next to the wad mine, are the Bowder stone, an immense detached block of stone, estimated to contain 23,000 cubic feet, and a remarkable group of yew-trees (celebrated in verse by Wordsworth) between Seatollar and the wad mine, on the W. side of the valley. The largest is said to be 21 ft. in girth, and is in perfect freshness and vigour: it is one of the most imposing vegetable productions which we have seen in England.

BORROWSTOUNNESS. [LINLITHGOWSHIRE.]

BORSOD, BORSCHOD, or BORSSODSKA, a co. in the prov. of the Hither Theiss, in the N. part of the kingdom of Hungary, is bounded by the following counties: on the N. by Gömör and Torna, on the E. by Abaujvar, Zemplin, and Szabolts, and on the S. and W. by Heves and Szabolts. Its area is 1365 sq. m. The mountains which traverse it in the W., are the last declivities of the Tserhät and Neitra branches of the Carpathians, both of which subside in this county; the first separating into two branches at Hámor, and forming the celebrated valley of Dios Györna. Both branches also throw out a number of subsidiary ones into the N. and S. of the county. The highest points of the Tserhät range within its borders are the Osztra, N. of Verbo, and the Nyáryuk near Vsinoy. The last branches of the Neitra range occupy a corner of Borsod between the Bodva and Sayó, and the mountains in the N.E. parts, likewise branches of that range, subside into the plains between Hidas and Nemeti, and the Karapta. The S.E. districts are one continued and beautiful plain, irrigated by rivers in every quarter. The principal rivers in Borsod are the Sayó, which enters its N.W. border at Putnok, and winds in a S.E. direction to Onod, where it receives the Lesser Hernád, and thence joins the Theiss, after having received the Greater Hernád. The Hernád skirts the county for a short distance in the E. The Bodva passes into it from Torna, and flows past Szendrö and Edeley, and the Theiss touches its S.E. extremity. The soil of Borsod is in general highly productive and equally adapted for grain, the vine, and the rearing of cattle. The finest wheat in Hungary is raised in the neighbourhood of Miskoltz, and of this wheat as well as of rye, barley, oats, and buck-wheat, considerable quantities are exported. Much wine is made, and of a superior quality; the best is the growth of Miskoltz, St. Peter, Karsán, and Harsánye. The other vegetable productions are fruit, including almonds and chestnuts, tobacco (particularly in the S. districts), hemp, flax, and timber in abundance from the mountainous parts. The extent of available soil is estimated at about 731,530 acres, about four-fifths of the whole surface of the country; and of these there are actually under the plough 307,800, converted into vineyards 40,000, and used as meadows 38,160. The remainder consists mostly of grazing land, woods and forests. The mountains, valleys, and pasture grounds, support a great quantity of cattle, sheep, and swine; the woods abound in game, and the rivers in fish. A great number of horses are likewise bred in the county.

Borsod possesses considerable mineral resources; copper is raised at Rudo Bányá, and excellent iron, from which the best common and cast steel in all the kingdom is manufactured, near Uppony, Tapoltán, and other places. A beautiful kind of marble is obtained from Felso-Jarkány; clay-slate, of which there is a large export, is raised near Visyó; and coals are dug at Sayó-Németi and Dios Györ. In every respect indeed Borsod has justly been designated Hungary in miniature.

The pop. is estimated at about 170,000, more than one-half of whom are Roman Catholics; the county contains 10 m. t., 167 vil., and 57 prædia, or privileged settlements. Many of the Jews settled in it are farmers; but the enterprising Greek has contrived to monopolize the trade of this and several other provinces in Hungary, and he has no

rival in Miskoltz either for the splendour of his dwelling, the beauty of his vineyards, fields, and meadows, or the luxury of his domestic habits. Though education is by no means neglected (for in Miskoltz alone five different sects have distinct schools), more than common depravity is said to prevail among the people in general. Borsod pays 63,411 florins (about 6300*l.*) as its quota to the war department. Its climate is temperate and agreeable. It is divided into four circles;—Miskoltz, in the S.E., the capital of which is the m. t. of the same name, a large well-built place on the banks of the Synzva, and at one end of the valley of Dios Györna, with about 14,000 inh.;—Erlau, in the S.W., of which the chief towns are Mezö-Kereztas (2500 inh.), and Mezö-Kövesb (5600 inh.);—St. Peter, in the N.W., capital Sayo St. Peter, on the right bank of the Sayo, a town full of Jews, and noted for the excellent wine its environs produce;—and Szendrö, in the N.E., of which the town of that name, on the Bodva, is the principal place.

BORTHWICK, DAVID, of Lochhill, lord advocate of Scotland in the reign of King James VI., afterwards King James I. of England. The early history of this learned person is involved in the obscurity which shrouds the rise of some of the brightest names in the juridical and literary annals of the country, no particulars being known of his birth or early life. When he first appears in the records he is designated 'Mr. David Borthwick of Auldstone,' an estate which he probably acquired by descent. Whether the 'Mr.' prefixed to his name indicated any literary or ecclesiastical character is uncertain: it frequently did so at that time; and we know that nearly all the first advocates of the college of justice, of which he became one, were more or less connected with the church. In the spring of 1549, which was just about seventeen years after the institution of the court of session, or college of justice, that court made choice of nine advocates 'being persons of gude conscience and understanding, to procure (i. e. practice in suits) befor thame in all actions and causes.' Borthwick was one of these; and in 1552 he was made a member of the public commission then appointed to treat with the commissioners of England on the affairs of the borders between the two kingdoms. On the 6th May, 1562, he appears as one of the prosecutors in the indictment against two individuals, Ferguson and Wright, for hamesucken* and the murder of John Borthwick of Restalrig. (Pitcairn's *Criminal Trials*.) On the 6th June, 1564, he was of counsel for the magistrates and town council of the city of Edinburgh in the prosecution against them for liberating on bail a prisoner committed on a charge of assault and murder (*Id. ib.*), and afterwards he was employed on several important occasions. He seems to have been standing counsel for the noble families of Huntley and Bothwell (*Act Parl.* vol. ii. p. 573), which had recently been united by the intermarriage of Lady Jean Gordon with the noted James earl of Bothwell; and on behalf of that nobleman took instruments of Queen Mary's pardon and forgiveness of him and his accomplices for her abduction to Dunbar, which her Majesty pronounced in court on 12th May, 1567 (*Act. Sed.* 10). On the death of Spens of Condie, in 1573, Borthwick was associated with Creighton of Elliok, father of the admirable Crichton, and who had been colleague to Spens in the office of king's advocate, and also advanced to the seat on the bench of the court of session vacant by Spens's decease; for it was then usual to make the king's advocate (or in the case of the office being held by two or more, one of them) a lord of session. The like practice existed in the old parliaments of France, after which, indeed, the court of session is said to have been at first modelled; and in both cases, we apprehend, for the same reason, namely, to attend to the crown's interest there; both courts at that time deliberating (like the ecclesiastical tribunals from whence they were derived) in secret with shut doors. Accordingly, besides the king's advocate, other officers of the crown had also seats on the bench, such as the treasurer and the justice clerk. The latter officer was originally the clerk of the lord justiciar of Scotland, but for about a century and a half he had acted also as public prosecutor in the justiciar's court, and for the preceding fifty years had devolved his duties at the table on a deputy. The king's

* This is a term known in the old law both of England and Scotland, and still in use in the latter country. Blackstone states it to be synonymous with burglary, or nocturnal house-breaking; but this is not its meaning in the law of Scotland. There it is the felonious seeking or invasion of a person in his dwelling-house; a breaking into a dwelling-house with intent to assault the owner; and this either by night or day.

advocate however was now advancing on the clerk's usurped province, and by the beginning of the following century entirely superseded him in his office of public prosecutor. Borthwick is also remarkable in being, as it seems, the first who had the title of 'Lord Advocate.' The learned Baron Hume (*Commentaries*, vol. ii. p. 131) supposes this title to occur in the records for the first time in the year 1598. But this is a mistake, for we find the king's advocate so addressed at the bar in the year 1573 (Pitcairn's *Criminal Trials*), and again on the 23rd Oct. 1576 (*Id. ib.*); and in the Act 1587, c. 115, the title appears as the accustomed style of that officer. The salary of the lord advocate at this time was 40*l.* Scots yearly, and that of a lord of session amounted to about the same sum. What the profits of the bar then were may be guessed from Sir David Lindsay's 'Puirman and Pardoner,' where the former says

I haif na gear bot just an English groat,
Quhill I purpos to give ane man of law.*

So that the emoluments and practice of the learned lord must have yielded him at least 100*l.* per annum, which though but 8*l.* 6*s.* 8*d.* sterling was a large income in those days. Borthwick retained the situations of a lord of session and lord advocate till his death, which took place in Jan. 1581, when his colleague Creighton, to whom the places had long been objects of much desire, became sole lord advocate, and also succeeded to the vacant seat on the bench.

An anecdote of this learned person is told by Scott of Scotstarvet. Borthwick had acquired various lands in different counties of Scotland, Berwick, Haddington, and Fife; but having raised his son James in several of them, he had the mortification to see them sold or charged with debt by the thriftless youth. When on his deathbed, learning that his son had sold the estate of Ballencrief, the one of which Borthwick had changed to Lochhill, and his name would descend with that of his posterity, the old man is said to have bitterly cried out, 'What shall I say? I will give him to the devil that doth get a fool and maketh not a fool of him:' which words became proverbial as Mr. David Borthwick's testament.

BORYSTHENES. [DNIPEP.]

BOS. [BISON, BUFFALO, Ox.]

BOS, LAMBERT, an eminent philologist, was born at Worcum in Friesland, November 23, 1670, where his father was rector of the college, under whom he received his early education in Greek and Latin. His mother, a woman of abilities, was aunt to Vitringa. Having gone through the classes in his father's school he became private tutor to the children of a man of rank, in whose house he continued to improve himself in classical studies. In 1694 he went to the University of Franeker, where his relation Vitringa was professor of the Oriental languages, divinity, and sacred history. In October, 1696, he was permitted to teach Greek in the university, and in the month of February of the following year, upon Sibranda's death, became the professor of that language. In 1704, when the Greek professorship at that university became vacant by the death of Nicolaus Blancard, the curators appointed Bos to be his successor, who on taking the chair read a dissertation on the propagation of learning by the Greeks through their colonies. About the end of 1716 he was attacked by a malignant fever, which ended in a consumption, a disorder which he inherited from his mother. He died January 3rd, 1722. About five years before his death he married the widow of a clergyman, by whom he left two sons. The extent of Bos's learning may be estimated by his works. In his studies he was so indefatigable, that he is said to have regretted every moment which was not employed in them. In his personal character he was candid, amiable, and pure.

He published, 1. 'Thomæ Magistri Dictionum Atticæ, Eclogæ,' cum notis, 8vo. Franq. 1698; 2. 'Exercitationes Philologicæ, in quibus Novi Fœderis nonnulla loca è profanis maxime auctoribus Græcis illustrantur,' 8vo. Franq. 1700; republished in an enlarged form with the addition of a dissertation 'De Etymologiâ Græcâ,' 8vo. Franq. 1703; 3. 'Mysterii Ellipsis Græcæ expositi Specimen,' 12mo. Franq. 1702. Of this work there have been numerous editions. It was edited by Chr. Schoettgen, 12mo. Lips. 1713; by Nich. Schwabel, 8vo. Norimb. 1703; and with additions by Chr. B. Michaelis, 8vo. Hal. 1765. Another edition of the Ellipsis was published by F. H. Schafer, 8vo. Leips. 1809. 4. 'Oratio Inaug. de eruditione Græcorum per Colonias eorum propagata,' fol. Franq. 1704; 5. 'Observationes Miscellanæ ad loca quædam cum Novi

Frederick, *versus imperium Britannicum*. Amstelredamum: Typographia Academica Johannis Voorn. Philologorum Societas Gronoviana, 1797. 6. "An edition of the 'Mephistopheles,' with preface, notes, &c. 2 tom. 8vo. 1799. 7. 'Aetipulatum Gronovium, seu pro Antiquaria Descriptione Invenit.' 1799. Prælog. 1713. 4to. The work, which became a schoolbook, there have been various editions: it was reprinted with improvements by Dr. Paul Leuncler, 8vo. Lips. 1749. It was translated into English by Samuel Stedman, 8vo. Lond. 1779; and in an enlarged form, but with notes, by the Rev. John Freagut, 8vo. Lond. 1837; and lastly, with an appendix, by George Daines, 12mo. Lond. 1817. A French translation by St. George was published at Paris in 1793. 8. 'Anmerkungen an Mercurius quædam Græcæ. Amstelredamum: Academice Societatis Librarium, 1716. 8. In the same year was published a new edition of Waller's 'Tetrameter Græcæ Invenit,' 8vo. Amst.; adding two chapters on accentuation and syntax, shorter and more methodical than those of Waller; this work was re-edited with Ræsch and other notes by I. F. Fischer, 8vo. Lips. 1758. Ræsch's notes and speculations on Aristotle are included in Jebb's edition of that author, 2 tom. 8vo. 1793-4.

BOCCACCIO, ALMODOVARII, DON JUAN, was born at Bagnacava in the year 1509, of a noble family. On his outward to the he devoted himself for a short time to the profession of a law. He afterwards travelled, but the countries which he visited are not mentioned in the brief notice that remains of him. Although in all probability he went to Italy and became intimately acquainted with its literature, it appears that he did not yet ascertain the idea of transplanting the forms and manner of Italian poetry into Spain; for the poetry that he wrote in his youth was all in the common Spanish lyric style. It was not until 1529, when, after having lived at the court of Charles V., and having formed an intimate friendship with Andrea Navagero, the envoy from Venice, he ventured to follow the current of the modern Italian, and assumed the character of a reformer of the lyric poetry of his nation, by writing sonnets in the manner of Petrarcha.

The general structure of the sonnet had long been known in Spain, but the genius of Castilian poetry was adverse to that form, and a thousand voices were raised against him and his friend and ally, the highly-gifted fellow-reformer, Garcilaso de la Vega. Some insisted that a professor should be given to the old Castilian metre, on the ground of euphony. Others went farther, and asserted that the war could preserve no distinction between the new hard-syllabic verse and the old. Finally, a third party discovered that Italian poetry was effeminate, and was fit only for Italian and Spanish. In fact, the attempt was considered nothing short of treason against poetry; and one of the sons of Isabella, Count de Castille, gave so far in his address against these innovators, a name to all the Petrarchists, as to compare them to the followers of Luther, the persecutors of another sect, the subverters of the old faith. Boccaccio saw that this violent opposition made him reflect seriously and fondly on his noble task; but as he was soon convinced of the futility of the reasons urged against his literary reform, he persisted in carrying it on; and through his perseverance, and the great talents and powerful example of his friend Garcilaso, his party rapidly increased, and obtained the ascendancy.

The nobility of his manners and his abilities recommended Boccaccio to the family of Alca, which was then one of the most brilliant among the Castilian nobility, and to which many Spanish poets constantly paid their homage.

Boccaccio was for some time Alca, or first governor, to the young Don Fernando de Alca, who was afterwards the lover of the heroine of the Spanish monarchy. He afterwards, however, in 1547, resigned this employment, in order to devote his time to study and the society of literary men. The year in which he died is not exactly known; it is only ascertained that his death happened before the year 1544.

Boccaccio's poetry is divided into three books. The first contains the *Mar de Amor* (the Sea of Love), and exhibits the various flights of the old Spanish verse.

The second consists of his *Sonnets and Complaints*, which, although written in imitation of those of Petrarch, still display the spirit of the old country, in which the wild suspensions of Boccaccio contrast throughout with the poetical

The third book is composed chiefly by a paraphrastic translation of the Greek poem of Hero and Leander. The first of this kind which appeared in the Spanish language. It is elegantly written, with a pure diction and an easy versification. In this first translation occurred a love story, the *Capitula*, abounding in pleasing images, but too much diluted in words, like most Italian poems of the same kind. In the *Amores to Don Diego Mendonça*, the best of Boccaccio's epigrams, he displays with delicacy and taste the character of domestic happiness and rural life. A narrative poem in the Italian style, called *Galatea Invenit*, closes this third book. A festive meeting of Venus, Eros, and other mythological personages, forms the *Folia*, rather carelessly executed, of this last poem, which is otherwise full of grace and animation.

Simplicity and dignity, poetic truth and feeling, are the characteristics of Boccaccio; but his chief merit consists in his courage and perseverance in carrying on the literary reform which was to enable Spain to rival Italy. His modest character counteracted not a little to afford to his party the same liberal of his countrymen. Had he compromised his labours by trying to beat down the old school he would probably have failed, for the party he had to contend with was little disposed to improvement, and far less to be taught by an arrogant novice.

The eighth volume of the *Parnassus Hispanicus*, by Bodard, contains a supplement to the biographical notices which Nicolas Antonio collected under the article 'Boccaccio.'

BOUCAWEN, EDWARD, second son of Hugh Lord Viscount Palmstall, was born 19th August, 1711. He was placed in the navy early in youth, and at the age of twenty-one was lieutenant of the *Hebe*. In 1740 he became captain of a twenty gun ship, the *Narborough*; and in the following year, under Admiral Vernon, acquired an honorable distinction for his intrepidity at the taking of the fortified city of Puerto Bello, on the Isthmus of Darien. Shortly after, at the siege of Cartagena, he led on a body of men, and resolutely attacked and took possession of a Spanish battery of fifteen 24 pounders, which exposed to the fire of five guns from an adjoining fort. On the death of Lord Beaulieu, in the attack upon Boca Chica, Boucawen succeeded to the command of the *Prince Frederick* of 70 guns. In 1742 he returned to England, married the daughter of William Grenville, Esq. of Kent, and in the same year was elected a member of parliament for Truro, in Cornwall. After the declaration of war with France, he took the command of the *Dreadnought*, captured in April, 1744, the French ship *Mada*, and landed at Spithead with 500 prisoners. As captain of the *Namor* of 74 guns, he greatly distinguished himself under Admirals Anson and Warren, in the engagement of Cape Finisterre, when a capture was made of ten large French ships of war. In the commencement of the action he was struck in the shoulder by a musket ball. He was made in the same year rear-admiral of the blue, and commander-in-chief of the sea and land forces appointed for the war in India; and he sailed in November from St. Helen's Road, in the *Isle of Wight*, with six ships of the line, five frigates, and 2000 soldiers. In July, 1748, his fleet appeared before the fort of St. David's, which is 12 m. S. of Pougherry. Having marched his army to Pougherry, and begun the siege, he was obliged, in consequence of the sickness of his men, and the approach of the autumn, to return in his ships; and is said to have made the retreat with prudence and skill. He soon afterwards obtained possession of Madras, which, in consequence of the declaration of peace, was delivered up to him by the French. In 1750 he arrived in the *Exeter* at St. Helen's, and found that in his absence he had become rear-admiral of the white. In the course of the following year he was made a lord of the board of admiralty, an elder brother of the Trinity House, and again a representative for Truro. In company with Admiral Mordaunt, he sailed in April, 1755, from Spithead with twenty four ships, to intercept the French squadron bound to America with supplies. Off the coast of Newfoundland he fell in with them, and captured two 64-gun ships, with 1600 prisoners, including the French commander Hocquet, who had twice before been defeated and taken prisoner by Boucawen. On his return to Spithead with his prizes, he received for this important service the thanks of the House of Commons. The season of war was now transferred to North America. A fleet of 70 ships (*Ann. Reg.* vol. 1. p. 70), with 14,000 men, was fitted out, and Boucawen was promoted to the rank of admiral of the blue, and

appointed commander-in-chief of the expedition. In February, 1758, accompanied by General, afterwards Lord Amherst and General Wolfe, he sailed with these forces for Halifax, and on the 2nd of June arrived off the fortress of Louisbourg, which, with the islands of Cape Breton and St. John, were taken, after some severe engagements, by the English admiral. In the following year, 1759, he was stationed with fourteen ships of the line and several frigates in the Mediterranean, and pursued the French fleet of Toulon, consisting of twelve large ships of war, through the Straits of Gibraltar to the Bay of Lagos; where he overtook them and fought a furious battle, which terminated in the burning of two of the enemy's ships, and the taking of three others, with 2000 prisoners. The French admiral, De La Clue, was carried on shore and died, in consequence of being struck by a cannon-ball which carried off both his legs. Upon the return of Boscawen to England, the thanks of parliament were again conferred, with a pension of 3000*l.* a year, and he was sworn a member of the privy council. At this time he received also the additional appointment of general of the Marines. In the summer of 1760 his fleet was lying unemployed in the Bay of Quiberon, on the western coast of France, and it is worth recording, as honourable to the humanity of the admiral, that when a great many among his crews were suffering from the scurvy, to which seamen were at that time very liable, he landed on a little island near the river Vannes, and daily for several months employed himself with a party of his men in cultivating a garden, in order to supply the sick with fresh and wholesome vegetables. On January 10th, 1761, he died at Hatchland Park, his residence, near Guildford, at the age of fifty, and was interred in the church of St. Michael Penkevel in Cornwall, where a beautiful monument by Ryabrah was erected to his memory. The mind of Boscawen appears to have been wholly intent upon his professional pursuits, and but little influenced by the spirit of political parties. His ability and courage as a naval and even as a military officer were highly appreciated by Lord Chatham, who is said to have often observed, that when he proposed expeditions to other commanders he heard of nothing but difficulties; but that when he applied to Boscawen, expedients were immediately suggested.

BOSCOVICH, ROGER JOSEPH, was born at Ragusa, May 11, 1711 (May 18, 1701, according to Lalande), and entered the order of Jesuits in 1725. He was appointed professor at the Collegio Romano in 1740 (Lalande), and was employed in various scientific duties by several popes. He was at Vienna on the part of the republic of Lucca in a dispute between that state and Tuscany, and at London in a similar character on behalf of his native place (1762). He was recommended by the Royal Society as a proper person to be appointed to observe the transit of Venus at California, but the suppression of his order prevented his acceptance of the appointment. After this event he was made professor at Pavia and subsequently at Milan. In 1773 he was invited to Paris, where the post of *Directeur d'Optique pour la Marine* was created for him. He left France in 1787, either because he found he might more easily publish an edition of his works in Italy, as Delambre supposes, or on account of the hostility of Condorcet and D'Alembert, as Lalande affirms, or because he disliked the irreligion of the French *savans*, as Hutton states, apparently from Fabroni (the Italian eulogist of Boscovich, whose *éloge* we have not been able to find). He settled however at Milan, where he was received with distinction, and was appointed to measure a degree in Lombardy. He was seized with melancholy, amounting almost to madness (Hutton from Fabroni), and died February 13, 1787.

Boscovich was a man of very varied attainments and considerable mathematical power. The different accounts of him partake of the bias of their several authors. His countryman, Fabroni, rates him as a man to whom Greece would have raised statues, even had she been obliged to throw down a hero or two to make room. Lalande, to whom a voluminous and miscellaneous writer was a brother in arms, affirms he had as much talent as D'Alembert, though not so much of the integral calculus. The Jesuits were not in favour with the Encyclopedists, so that probably there is some truth in the account of Lalande with respect to D'Alembert. Delambre says, 'in all his dissertations we see a professor who loves to converse much better than to observe or calculate,' which seems to us perfectly true; but

at the same time Boscovich was a man of talent, though not of first-rate power or energy; exceedingly fertile in ideas of merit, but not of first-rate merit. The excessive number and length of his dissertations has rendered his name less known than it deserves to be, since there is not among them any one *point d'appui* for the highest sort of renown.

Boscovich was one of the earliest of the continental Newtonians, and introduced the doctrine of gravitation at Rome. His first appearance as a writer on this subject is in an explanatory tract published at Rome in 1743; but in his '*Philosophiæ Naturalis Theoria*,' &c., Venice, 1758, he endeavours to apply the same principle to the actions of molecules on each other. It is remarkable that in spite of the prohibition of the Copernican theory (and in consequence of the Newtonian) by the superintendents of the *Index Expurgatorius*, two Jesuits published an edition of Newton in 1739, and a third began to teach it at Rome in 1749. But previously to this (1736) he had distinguished himself by a solution of the problem of finding the sun's equator and rotation by observation of the spots, which Delambre calls one of the most elegant which had been given. It was the first of its kind.

In 1750 he began to measure an arc of the meridian from Rome to Rimini, by order of the pope, and the account of this celebrated and useful operation (which was carried on in conjunction with Christopher Maire, another Jesuit) was published in 1755. But Boscovich informs us, that while he was riding about or waiting for his observations, he was engaged in composing Latin verses on the eclipses of the sun and moon. These verses were published at London in 1760 by Millar and Dodsley, in six books, entitled '*De Solis et Lunæ defectibus*.' It is lucky for the fame of Boscovich that the degree he measured was not as poetical as his poem is long and minute: the first has always been held a good observation, and the second is best described by Delambre's remark, that it is uninteresting to an astronomer and unintelligible to any body else. We have noticed it because we conceive it is the best channel through which an Englishman who reads Latin (and Boscovich wrote in other language) can make a personal acquaintance with the author. Being published in England it is frequently found among the second-hand booksellers; and the notes, which are often more poetical than the text, contain a large collection of his opinions.

The degree of the meridian above-mentioned, his theory of comets, application of mathematics to the theory of the telescope, and to the perturbations of Saturn and Jupiter (of which Lagrange said that the motto '*Iræ olim, nunc turbat amor natumque patremque*' was the only good thing in it), the discussion relative to the invention of the double refraction micrometer, the application of the differential calculus to problems of spherical trigonometry, together with his dissertations on various points of physics, will be noticed in their proper places, so far as they influence the history of the several sciences advanced or applied. We will now merely notice 1. The '*Elementa Universæ Mathematicæ*,' &c., Rome, 1754, a course of mathematics for his pupils; 2. The collection of works alluded to above, '*Opera pertinentia ad Opticam et Astronomiam*,' &c., 5 vols. Bassano, 1785; and 3. The work on the degree of the meridian above-mentioned, '*De Litterariâ Expeditione per Pontificam Ditionem ad Inveniendos Duos Meridiani Gradus*,' &c., Rome, 1755. This work is much more esteemed than the French translation, Paris, 1770, as the map given in the latter is incorrectly reduced. (*Biog. Univ.*) We may refer for information to the usual authorities and also to the *éloge* of Lalande (besides that of Fabroni above-mentioned) in the '*Journal des Savans*,' 1792, p. 411.

BOSJESMANS, literally 'bushmen,' is the name which the Dutch colonists at the Cape of Good Hope have given to a wild and roaming race of people, who live about the northern skirts of the colony, and as far as the Orange river, without any settled habitations or kraals, and who do not rear cattle or constitute tribes like the Hottentots. It seems however ascertained that the Bosjesmans are a branch of the Hottentot race, which separated from the rest long before the establishment of the Europeans in Southern Africa, and took to a wandering life in the northern and more inland parts of the country. As we know nothing of the origin of the Hottentots, it is impossible to say whether the Bosjesmans remained in a wild state while other tribes became settled and partially civilized, or whether they were stragglers from the settled Hottentot

tribes who fell back to a wild state. Their language appears to bear some analogy to that of the Hottentot, although the Bosjesmans and the Hottentots do not understand each other. They have both the same clacking sound of the tongue, only the Bosjesmans have it stronger and more frequent, and they draw out more the ends of their sentences.

Lichtenstein says that the Bosjesmans are a distinct people, but he acknowledges that 'they have the universally distinguishing features of the Hottentots, their broad flat nose, the long prominent cheek-bones, and the yellow-brown hue of the skin,' and that 'their physiognomy has the same characteristic features as that of the Hottentots, only more wild and animated, owing to their insecure and wandering habits of life.' They are neither husbandmen nor shepherds; they have no cattle or flocks, but kill wild animals with their arrows, catch fish, and also feed on locusts, snakes, ants' eggs, and insects, and upon roots and berries. They are capable of bearing hunger for a long time, and, like other savages, they eat voraciously when they fall in with plenty. The Bosjesmans are generally very lean, and of a low stature, as if stunted in their growth. A sheep-skin fastened round the neck with the woolly part inside, a greasy leather-cap on the head, with their woolly hair smeared with grease and dust, and tied in a number of knots hanging down, a jackal-skin fastened with a leather thong round the middle of the body, sandals of ox-leather bound round the feet, a bow and a quiver with poisoned arrows, a gourd or broken ostrich egg to fetch water, and two or three straw mats, which being placed on sticks form a sort of tent,—these constitute all their apparel, furniture, and utensils. They catch sea-cows in pits on the banks of the Orange river. They sleep in caves, or more commonly squat among the bushes, from whence their name. They do not associate in any considerable numbers, but wander about in small parties, consisting of individuals of one family, or such as meet by chance. 'Their wild, shy, suspicious eye, and crafty expression of countenance,' says Lichtenstein, 'form a striking contrast with the frank open physiognomy of the Hottentot.' When the Europeans first extended their settlements to the Snow Mountains, there were no Bosjesmans there; the country was peopled by settled tribes of Hottentots, but the report of the wealth of the colonists attracted the Bosjesmans from the north, where they lived near the banks of the Orange river. They were then, and had been from time out of date, in a state of war with the settled tribes of both Hottentots and Caffres, whose cattle they stole whenever they had an opportunity. They carried on the same system of predatory warfare against the Dutch colonists, who, in their turn, waged a war of extermination against them. At last, towards the beginning of the present century, attempts were made to establish some sort of truce between the Bosjesmans and the border colonists, by means of presents of beads, buttons, tobacco, and other articles. In one instance, the colonists gave to a party of Bosjesmans a number of cattle and sheep, that they might become settled and tend their flocks; but other parties came from the interior, killed the cattle, fed on the flesh as long as it lasted, and then resumed their wandering life.

It appears however that the rapid spread of civilization during the last thirty years has had some effect, even on the wild Bosjesmans. The Rev. John Campbell gives a more favourable account of them than Lichtenstein. He met them both south and north of the Orange river; he employed them as guides, saw many of them employed as domestics by the colonists, or by the Koranna Hottentots, and they appeared to behave well and faithfully in their respective capacities. He met kraals of Bosjesmans north of the Orange river who seemed to live in peace under a chief, who told him 'that they had plenty of game and water, that they took nothing from anybody, and that they should be glad if any one came to teach them what they did not know.' But yet these people had no means of industry, and no subsistence beyond hunting and fishing, no dress but skins, and no weapons but arrows. The great tract between the northern border of the colony and the Orange river is still occupied by wild Bosjesmans, who however seem to have become more shy of attacking the colonists. The Koranna Hottentots, who live north of the Orange river, are also a check upon them. In fact, the Bosjesmans are beginning to be surrounded by civilization, and consequently they must either become civilized themselves

or become extinct. (Lichtenstein, Burchell, Campbell, Thompson.)

BOSKOWITZ, a t. in the circle of Brünn in Moravia, situated on a high hill in the bosom of a fertile valley near the borders of the circle of Olmütz; the hill itself is encircled by the riv. Biala and that side of it behind the town is a mass of precipitous rocks. It is the property of Count Dietrichstein, and is remarkable both from its site and the industry of its inh., who carry on the manufacture of alum, Berlin blue, potashes, glass, liqueurs, &c. Boskowitz contains a pop. of nearly 4000 souls, among whom are 300 Jewish families, who live in a distinct quarter of the town. The Dietrichstein family have a palace at Boskowitz, and are proprietors of the gold and silver mines near it.

BOSNA-SARAI (or **SARAJEVO**), formerly the capital of the kingdom of Bosnia, and at present one of the principal towns in the Turkish eyalet or province of Bosnia, is built upon the ruins of the ancient Tiberiopolis, and still retains some trace of its former splendour; 43° 54' N. lat., 18° 26' E. long. It stands on the Melaska or Migliazza, which falls into the Bosna at no great distance from the town, and has a massive stone bridge across it. The old walls which encompassed it when it fell into the hands of Prince Eugene in 1697, are completely decayed, and it is now an open place; its sole defence consisting of a citadel of considerable strength, upon the ramparts of which eighty cannon are mounted. This citadel is situated some distance to the E. of the town, and is usually garrisoned by 10,000 or 12,000 Turkish soldiery. Bosna-Sarai is reputed to be as large in circuit as Adrianople; it contains 100 mosques, great and small, among which that of Chosrem-beg with its clock (a great rarity in Turkish towns) best deserves notice; one serai or palace, erected by the great sultan Mahmoud I., four Christian churches, three monasteries of the Minorite order, a number of medressés or schools, baths, and charitable institutions; two large bazaars or besestans, several market-places, between 14,000 and 15,000 houses, mostly built of wood, with latticed windows, and a pop. of about 60,000, one-third of whom are Mohammedans, and the remainder Roman Catholics, Jews, Greeks, &c. The town is handsomely built, and has a gay oriental appearance from the number of minarets and steeples which embellish it. Bosna was the residence of the governors of the prov., who are pashas of three tails, until the atrocities committed by one of them drove the inh. to revolt, and he was obliged to flee to Travnik, where his successors have since continued to reside. The people are an industrious race, and manufacture arms, utensils of copper, which they gild and tin, and with which they almost exclusively supply the Turkish markets, iron-ware, woollen and worsted stuffs, morocco-leather, horse-hair bags for holding rice, cottons, &c.: there are also several tanneries in the town. Bosna-Sarai, being the staple mart for the whole prov., is a place of considerable trade. The effect of two lofty mountains to the E. of it, as well as of its situation on the declivity of the Dinaric Alps, is to render the climate chilly and bleak, though not to such an extent as to prevent fruit or even grapes from ripening. On a plain which stretches W. of the town as far as the banks of the Bosna, are the baths of Serajevsko.

BOSNIA, or **BOSNA**, one of the eyalets or prov. of Turkey in Europe, derives its name from the riv. Bosna, which runs through the heart of it; it extends from 42° 40' to 45° 20' N. lat., and from 15° 50' to 19° 10' of E. long. According to the subdivision laid down by the Turkish government in 1824, it comprehends 6 sandshaks, or circles; namely, Travnik, Banyaluka, Srebernik, Isvornik, Novibazar, and Hersek, the first four being composed of Bosnia Proper and Turkish Croatia, while Novibazar consists of that part of Servia which was added to Bosnia in 1815, and bore the name of Rascia from its being watered by the Rasca, and Hersek of the Herzegovina and Turkish Dalmatia. These six sandshaks are again subdivided into 48 minor circles. Bosnia, therefore, as at present constituted, is bounded on the N. by Austrian Sclavonia, the Unna and Save partly forming the line of demarcation, on the E. by Servia, on the S.E. by Albania, on the S.W. by Austrian Dalmatia, and on the N.W. by Austrian Croatia. It is the most W. possession of Turkey, and in its present state contains, according to a recent writer (von Zedlitz) about 22,300 sq. m.; though others, who have probably omitted to include the late additions of territory in their estimate, do not assign it a greater area than 18,000 sq. miles.

Bosnia is a mountainous country, and contains many deep valleys, but only one plain of any considerable extent. The mountains are branches of the Dinaric and Julian Alps, which enter it on the side of Austria. The Dinaric range, indeed, after traversing the prov. from N.W. to S.E. continues along the S. frontiers, where some of its peaks are above 6000 ft. high; distinct parts of it are known in the country itself by various designations, such as the Uilazza Kossa, Czrnagora, Velicki, Radacza, Ivan-Planina, Nissova-Gora, Baba, and Torba-Planina. There are three offsets from the main mass of these Alps, which slope down to the banks of the Save, and divide the land into four natural portions; the one lying between the Unna and Verbas, the second between the Verbas and Bosna, the third between the Bosna and Drinna, and the fourth between the Drinna and Morava. The lower regions of the Dinaric range are in many parts entirely naked, those immediately above them are covered with pines and rich pastures, and the uppermost consist of rocks thinly interspersed with wild rosemary, thyme, and other low plants.

The Save, the principal riv. in Bosnia, first waters its territory in the N.W. at the point where the Unna falls into it, and running in an E. direction somewhat inclined to the S., constitutes the whole N. boundary between Bosnia and the Austrian possessions; its frequent inundations make extensive swamps, the largest of which, the Shirma, lies to the W. of Bogurdia. The Unna, one of the tributaries of the Save, rises in the W. part of Bosnia, near Mounts Staratina and Vitoyogo, not far from Oberunnacz, winds N. past Bihacz and Novi, at which last place it receives the Sanna, and ultimately flows into the Save, after forming part of the N.W. frontier on the Hungarian side; namely, from Iskanda to Uscitza, somewhat above Gradisca, where it has its efflux. This riv. is not navigable, though even when not flooded it is from 6 to 7 ft. deep, and from 200 to 400 ft. wide. The Verbas, another Bosnian river, rises in the heart of the country at the foot of Mount Radussa or Radovna, part of the great chain which separates Turkish Croatia from the Herzegovina, flows in a N. direction past Bodsacz and Banyaluka, receiving on its right bank the Veliki, Ugar, and Verbanya, and on its left the Pliva, and unites with the Save to the E. of Gradisca, after a course of about 130 miles. The Bosna rises to the W. of Scrazero on Mount Trebevic, part of the N. declivity of the Ivan-Planina range, flows N., receiving in its course the Migliazza, Szabina, Spreca, &c. on its right bank, and the Misna, Foinicza, Lepernicza, &c. on its left, and after running about 140 m., falls into the Save near the Lukatscher Schantze (L. Fort), below Brod. Vissoko, Zenica, Vranduck, Shebshe, Doboï, Kotorsko, and Dobor lie upon its banks. The Drinna, another considerable riv., springs from the foot of the Lesina range to the W. of Srebernicza, divides the N.E. districts of Bosnia from the Servian territory, runs N. past Zvornik until it reaches Leshnicza, where it enters a level country, and afterwards joins the Save opposite to Raca, and not far to the W. of Shabacz: its channel in this quarter is again narrowed by mountains. In its course it receives the Tara, Pima, and Limus. This riv., as well as the Verbas and Drinna, is navigable for vessels of about 50 tons, and its waters, like those of the Verbas, bring gold-dust down with them, which the Turks, it is conceived from jealousy, will not allow to be collected. The smaller riv. of Bosnia are the Western Morava, in the S.E. part of the country, and the Moraka or Boyana in the sandshak of Hersck, which runs through the Boyana lake and falls into the Adriatic on the Austrian coast: together with the Baba, Neretra, or Narenta, Rama, and other tributaries of these two rivers. Bosnia has no lakes of any importance, the largest being the Mostarska Blato. It contains a number of mineral springs, among which the warm-baths of Novibazar and Budimir, and the acidulous waters of Lepernicza or Kiseliat, are most in repute.

The climate is mild and temperate, though the country is liable in the spring to heavy falls of snow, which lie on the low lands for many weeks. In summer heavy falls of rain and burstings of water-spouts are of common occurrence, but they are highly beneficial in moderating the heat. The character of the climate, indeed, may be inferred from these facts; that wheat is harvested in July, and grapes are ripe in August. The air is said to be healthy at all seasons, though the dry nipping Borra, or north-easter, is frequently prevalent.

The soil of Bosnia, as might be expected from the moun-

tainous character of the country, is in general of a rocky and stony nature, adapted rather for rearing cattle than raising grain: some parts of it, however, particularly the plains and valleys near the rivers, are very productive. Wheat and barley, but not much rye, are grown in the level lands, and maize is a favourite object of cultivation about Novibazar and along the banks of the Unna; the greatest corn-districts are about Gradacz, Petrovacz, and Grostuzza, and the produce is seldom made into bread, but consumed in the shape of cakes or mamaliga. Pease and beans are extensively raised; and flax and tobacco are grown in the neighbourhood of Zvornik and Novibazar. Fruit of course is abundant in a country which has whole forests of fruit trees; the chestnut and mulberry are common, but silk is produced. The plum is of great use in making a species of brandy, called Stivavicza, which is chiefly consumed by the Bosnians themselves; and a luscious liquor, termed Pekmes, is extracted from the pear. The Bosnians are strong and fiery, but owing to ignorance of the art of making them, they will not keep: the best are made in the environs of Mostar and Novibazar.

The high lands and mountains of Bosnia are so densely covered with forests, as in many parts to form impenetrable wildernesses; the trees of which they are principally composed are the oak, beech, pine, fir, and linden; hence the country produces and exports timber for all purposes, whether for building or fuel, and much pitch, tar, and potash. Zvornik is the great mart for dealers in timber, who despatch large quantities from that spot to Zemlin and other parts of Turkey, by water-carriage along the Drinna, Save, Danube, &c. The Bosnian woods abound in wild animals; deer, boars, bears, wolves, lynxes, and foxes, and hunting is a favourite and profitable occupation. The rearing of domestic animals has received little attention: for instance the breeding of horses, of which Bosnia possesses a strong and hardy race, is neglected almost every where, except in the inhospitable districts of Kliucz and Glamoc, which are wholly tenanted by Turks. Large herds of cattle are kept, and bullocks form a considerable article of Bosnian export. The only buffaloes are those fed for private use in the sandshak of Novibazar. Many of the sheep have upright winding horns, and coarse knotted wool, and are of a large size; the Wallachian and Dalmatian breeds have also been introduced. The Bosnians in general pay much attention to their flocks, and the wool they produce in market is considered the best in the Levant. Goats are common; swine are fed by all who reside near the Save and Drinna, where they have the advantage of extensive woods of oak and beech; and poultry are abundant everywhere. The rivers abound with fish, but the supplies are mostly consumed in the country itself. Much honey is made, but the wax is of indifferent quality.

Mining has not been carried to the extent which the undoubted resources of Bosnia point out; for the Turks have hitherto manifested an almost unaccountable reluctance to allow them to be turned to account. The mountains round Bosna-Sarai are said to contain large quantities of gold and silver; and in the centre of an extensive deep wood about 7 m. from Travnik, the excavations of the celebrated gold-mine of Hatnizza (literally signifying gold in the Bosnian tongue) are still visible; but the inhabitants are so timid as to be afraid of venturing near them. There are silver-mines near Srebernicza on the Drinna, Krupica on the Unna, and Kamengrad within a short distance of the Verbas. The iron-mines in the vicinity of Bosna-Sarai are worked by gypsies with the simplest mechanical means that can be imagined. They are situated near the Franciscan monasteries of Feinicza, Suttiska, and Kressovo, and there is a number of smithies, in which horse-shoes, nails, locks, iron-plates, and other wares are manufactured; iron is also raised at Vakup, Stari-Maidan, Kamengrad, Vissoko, and Varesh. The quicksilver-mines near the monastery of Kressovo are rich, but wholly neglected: a silver mine is at work in the neighbourhood of Zvornik. There are fine quarries of free-stone and mill-stones, alabaster, and marble, as well as coal-mines and saline springs; the most remarkable of these springs flows out of a cavern near Tuzla, but it is turned to no account, and all the salt consumed in the country is imported from Wallachia.

Bosnia possesses some inconsiderable manufactures of leather, coarse woollens, worsted coverlids, and other woollen stuffs. There is a manufactory of cannon-balls at Kamengrad, a saltpetre work at Jaicza, and powder-mills at

on one of which he is styled Iulius, and on another Tiberius Iulius. R. Rochette conjectures that Rhescuporis took this title about A.D. 6 or 7, when Tiberius, during the reign of Augustus, was in Illyria with a powerful army. (Dion Cass. lib. lv. c. 27, &c.; Sueton. *Tiber.* 16, 17.) Two coins of Cotys are also published by R. Rochette, but it is difficult to determine to what prince or princes these medals are to be assigned.

(Strabo, pp. 309, 493, &c.; Raoul-Rochette, *Antiquités Grecques du Bosphore-Cimmerien*, Paris, 1822.)

BOSSINEY with TREVENNA, a bor. and m. t. in the par. of Tintagell, hund. of Lenewth, and co. of Cornwall, 18 m. W. by N. from Launceston, and 231 W. by S. from London.

The bor. of Bossiney extends over a great part of the par. of Tintagell, and comprises about 350 English acres. The corporation claim to be a corporation by prescription; but it appears that a charter was granted them by Richard Earl of Cornwall, brother of Henry III. Bossiney enjoyed the elective franchise from the seventh year of the reign of King Edward VI. until the passing of the Reform Act, when it was totally disfranchised. The revenue of the corporation is very small, arising only from the tolls of fairs and markets, and the rent of a mill, altogether not exceeding 4l. 4s.

The pop. is returned with the par. of Tintagell, which in 1831 was 1006: males, 487; females, 519. It appears from the Corporation Report, that in 1830 there was only one house above the value of 10l., and none above that of 20l. The assessed taxes ending 5th April, 1831, were 45l. 15s. 4d.

Bossiney has a market on Thursday, and a fair, which is now held at Trevenna, principally for horned cattle, on the first Monday after the 19th of October. The town-hall is chiefly used as a charity-school, to the master of which the corporation pay a salary of 10l. per annum.

Bossiney is situated on a wild bleak part of the N. coast of Cornwall, and appears formerly to have been a place of some importance. Leland, in speaking of it, says—'Bossiney hath bene a bygge thing of a fischer town, and hath great privileges graunted unto it. A man may see there the ruines of a greate number of houses.'

Near this place is the castle of Tintagell, supposed to have been the birth-place of the famous King Arthur. Built on a high rock that juts out into the sea, by which it is nearly surrounded, this castle must have been a place of considerable strength. Both Norden and Carew speak of it as almost inaccessible, and Leland calls it 'a marvellous strong and notable fortress, and almost *situ loci inexpugnabile*.' In his time a chapel seems to have occupied part of the site of the keep, which he calls the dungeon of St. Ulette, alias Ulianne.

The church of Tintagell is supposed by the author of the *Magna Britannia* to have been appropriated to the abbess and convent of Fontevrault in Normandy, and that, having passed in the same manner as Leighton-Buzzard in Bedfordshire, it was given by Edward IV. to the collegiate church of Windsor. The net income of the vicarage is 220l. The dean and chapter of Windsor are the patrons.

(Lysons' *Magna Britannia*; *Correspondence from Bossiney*; Leland's *Collection*; Carew's *Survey of Cornwall*, &c.)

BOSSU, RENE' DE, was born at Paris, March 16, 1631. His father was Jean de Bossu, Seigneur de Courbevoie, a king's counsellor and an advocate in the court of Aides; his mother was Magdalene de la Lairo; he studied at Nanterre, was admitted as a regular canon in the abbey of St. Genevieve in 1650, and took priest's orders in 1657. Twelve years of his life were occupied in teaching philosophy and the Belles Lettres; the remainder were spent in the solitude of his cloister, in which he died March 14, 1680. His first work *Parallèle de la Philosophie de Descartes et d'Aristote*, Paris, 1674, was not very favourably received at the time of its appearance, and is now altogether forgotten; but his second, which was published only a few months afterwards, *Traité du Poème Epique*, although it has ultimately shared a fate similar to that of its predecessor, at one time attracted considerable attention. The learned hypothesis of this chimerical essay teaches that an epic poem is essentially an allegory; thus the writer, before commencing his work, fixes upon some one great moral text which he designs to illustrate, considers fable, machinery, action, character, and all other accidents of poetry only as so many modes subservient to his grand object. Thus,

says Bossu, Homer, who saw the Greeks constitutionally divided into a great number of independent states, which it was often necessary to unite against a common enemy, feigned in his *Iliad* the quarrel between Achilles and Agamemnon as productive of evil, in order that he might illustrate the advantages of a confederacy. On the reconciliation of those princes, victory, which had long been delayed, is rapidly achieved. There can be no doubt that the *Iliad* does illustrate the effects of disunion, but are there not also other moral truths which are equally illustrated by it? The motive which led the Grecian chiefs to Troy was not unjust, and Homer certainly has no intention of representing it to be so. As the capture of Troy could not have been completed without their presence, the poet tacitly admits therefore that there may be sound reasons to induce a prince to absent himself from his dominions. Yet we are told that the design of the *Odyssey* was to inculcate a directly opposite doctrine—to show the national calamities which must inevitably result when a monarch quits the helm at which he ought to preside. If this be so, the moral truths inculcated by the two greatest existing epics, the works of a single hand (if they are both by the same hand, which is at least doubtful), are in direct opposition to each other.

A defence of Boileau against some attacks by St. Sorlin, introduced Bossu advantageously to the friendship of the poet. A few unimportant particulars of his private life are prefixed by Courayer to an edition of the *Treatise on Epic Poetry*, published in 1714. Bossu bequeathed a number of MSS. which have not yet seen light (and which perhaps may remain in darkness without much disadvantage to his memory) to the Abbey of St. John of Chartres, of which he became sub-priest about 1677. In the 9th volume of the *Mem. de l'Acad. des Inscriptions*, the Abbé Vatry twice appears as the champion of some of his exploded notions, which are more soberly examined by the Abbé Batteux in the 39th vol. of the same work; and at a later season incidentally by La Harpe.

BOSSUET, JACQUES BENIGNE, second son of a counsellor of the parliament of Metz, and descended from a respectable Burgundian family for the most part engaged in the law, was born at Dijon, September 27, 1627. He was placed by a maternal uncle, president of the parliament of that city, in the college of the Jesuits, where his laborious application to study soon procured for him a nickname containing a punning allusion to his real name, *Bossuetus aratro*. At a fitting age (1642) he was removed to the college of Navarre in Paris, where, after a ten years' course, he received the degree of Doctor and the Order of Priesthood. He then retired to perform the clerical duties of a canon in the cathedral of Metz, of which church he afterwards became archdeacon and dean, and where he distinguished himself by labouring arduously for the conversion of the Huguenots. The neighbourhood of the capital led him to preach frequently before Anne of Austria, who was so pleased by his pulpit eloquence, that she nominated him to deliver the Advent Sermons at court in the chapel of the Louvre in 1661, and the Lent Sermons in 1662. The king was highly gratified by his discourses, and in 1669 presented him to the bishopric of Condom. In the year after his consecration he was appointed to the important office of preceptor to the dauphin, and finding his necessary attendance at court incompatible with the performance of his episcopal duties, he asked and received permission to resign the see. The priory of Plessis-Grisonou, which he received in compensation, produced about 3000l. a year, according to which revenue he framed his establishment. On promotion to the Abbey of St. Lucien de Beauvais, a richer benefice, he assigned all its surplus to charity, in no manner altering his personal expenditures. The Duc de Montausier was governor, the learned Huet, afterwards Bishop of Avranches, was sub-preceptor to the young prince. The method in which his education was conducted by these three most able men is fully exhibited in a letter written by Bossuet to Pope Innocent XI. Under the care of Huet appeared the well-known edition of the *Delphin Classics* put forth ostensibly in *usum Serenissimi Principis*. At the express wish of the king, Bossuet studied anatomy, in order to afford his royal pupil some elementary instructions in that science. For that purpose he attended the lectures of Nicolas Steron, a Parisian professor; from which he compiled a short manual of two and thirty octavo pages, which has shared the fate of most other amateur treatises. For the use of the dauphin Bossuet composed also his *Discours*

sur l'Histoire Universelle, which he published in 1681. It consists of three parts, the first of which contains an abridgment of universal history, from the Creation to the reign of Charlemagne; the second embraces the chief proofs of Christianity; and the third attempts to unravel the causes of the rise and decline of nations. Upon this work Voltaire founded his opinion of Bossuet's pre-eminent eloquence; and of the first part, which most readers would suppose to be little more than a dry index, a later critic (Mr. Charles Butler) has declared that 'it scarcely contains a sentence in which there is not some noun or verb that conveys an image or suggests a sentiment of the noblest kind.'

The chief reward with which Louis compensated the services of Bossuet in the education of the Dauphin was the bishopric of Meaux, to which see he was consecrated in 1681. He filled also the high posts of almoner to the dauphiness, principal of the college of Navarre, warden of the Sorbonne, counsellor of state, and first almoner to the duchess of Burgundy. He had the distinguished honour of heading, jointly with Mad. de Maintenon, the deputation appointed to receive the last-named princess when she came from Bavaria on her marriage. On that occasion, Madame de Sevigné writes, with not less truth than causticity, 'if the duchess thinks all the men and women in France resemble the two who have been sent to her she will be egregiously disappointed.'

The bishop's time, however, was chiefly occupied in his diocese, where he devoted himself to the humble but useful task of pastoral instruction. Among his posthumous works are three catechisms, respectively, for beginners, for the instructed, and for the well-instructed. He composed also a manual of prayer, and translated many of the church hymns. His health continued uniformly good, and allowed the performance of all ministerial duties till the last year of his life, when he suffered under the stone. During intervals of ease he framed a commentary on the twenty-second psalm (the twenty-first of the Vulgate), many passages of which are equal in vigour to any of his earlier compositions. On the 12th of April, 1704, he died at Paris, having passed his seventy-sixth year. Soon after the death of Bossuet his works were collected in twelve 4to. volumes, to which three posthumous writings were afterwards added. The Benedictines of St. Maur undertook a complete collection of his works, which, we believe, is still unfinished, after extending to twenty quarto volumes.

Bossuet is esteemed by the Roman Catholics as the most eminent advocate of their creed; but whatever might be the influence which his controversial writings exercised at the time of their appearance, it is not upon these that his fame rests most securely at present. To give an exact catalogue of his works would far exceed our limits, and we shall confine ourselves to his chief productions. He commenced in 1655 with a 'Refutation du Catechisme de Paul Ferri,' a Huguenot minister at Metz; we find him, not long afterwards, vehemently engaged with Caffaro, a Theatine monk, in the reprobation of theatrical entertainments. Boursaut, a dramatic writer who enjoyed some contemporary reputation, was affected by scruples of conscience concerning the subjects to which his talents had been directed, and was relieved from his penitentiary burthen by a letter which Father Caffaro addressed to him, and which may be found (if it is now to be found at all) printed separately, and also prefixed to the 'Théâtre de Boursaut,' 1725. Bossuet replied to this letter in more polished language indeed, but with scarcely less severity of censure upon the diversions which he condemned than animated Prynne or Jeremie Collier. The argument was afterwards remoulded into an essay, published under the title of 'Maximes sur la Comédie.' But the most celebrated of Bossuet's polemical works are his 'Exposition de la Doctrine de l'Eglise Catholique sur les matières de Controverse' (1671) and his 'Histoire des Variations des Eglises Protestantes.' The former was composed for the private use of the marquis de Dangeau, and it is said that an accidental perusal of it greatly contributed to the conversion of the Maréchal de Turenne. It was circulated in MS. long before its publication, and attained the final state which it now exhibits by very slow degrees. Its most important chapters, namely, those on the Eucharist, on Tradition, and on the Authority of the Church, were wanting in the original sketch, and the Sorbonne, when applied to for their approbation, privately censured many parts which they conceived to be unsound.

Nine years elapsed and considerable alterations took

place before it received the approval of the Holy See, and it is averred that many of the doctrines when preached by others were declared to be scandalous and pernicious. Clement IX. positively refused to acknowledge it, but two briefs were issued in its behalf by Innocent XIth; one, Nov. 22nd, 1675; the other, July 12th, in the year following. The Gallican clergy, assembled in 1682, declared that it contained their doctrine, and an authority of our own time, which few of the Romish persuasion will be inclined to dispute (Mr. Charles Butler) has stated that 'the Romish Church has but one opinion of it; in private and in public, by the learned and the unlearned, it is equally acknowledged to be a full and faithful exhibition of the doctrine of their church.' It has been translated into almost every European language, but unhappily the English version by the Abbé Montagu in 1672 bears a bad character. The assertion that it was translated by Dryden, rests, as Sir Walter Scott has shown, on very slight authority (*Life of Dryden, Works, i. 339*). In the Bodleian Library (Oxford) there is a translation published in London 1663, in the title page of which is the following note in Baron Barlow's handwriting:—'By Mr. Dryden, then only a poet, now a papist too; may be he was a papist before, but not known till of late.' Wake, afterwards archbishop of Canterbury, and M. de St. Bastide, a French Protestant minister, are the most distinguished opponents of the points in which it invites controversy.

The 'Exposition' awakened much attention in France; and out of it arose a personal conference between Bossuet and M. Claude, whom the Protestants considered to be their head, held in 1681, in the presence and at the request of Mademoiselle de Duras, a niece of Turenne, who sought an excuse for the change of faith in which she had resolved to imitate her uncle. One of the chief questions debated was the authority by which Jesus Christ directed that his future church should be guided in case of dissensions concerning doctrine. The debate was conducted with much regard to courtesy, but terminated, like all similar debates, without any approach to conviction. Each party published its own account of the conference, and each claimed the victory, after representing the contest with so wide a difference of facts that they might be supposed to relate to wholly distinct occurrences. The language in which Bossuet expressed himself concerning this disagreement is singularly free from the bitterness which has too frequently distinguished controversy, and which has rendered the mutual hatred of theologians a proverb. 'It is not my intention,' he says, 'to accuse M. Claude of wilful misrepresentation. It is difficult to remember with precision the things which have been said, or the order in which they have been spoken. The mind often confounds things which were spoken with things which occurred afterwards, and thus, without the slightest intentional aberration from it, truth is often disfigured.' Bossuet was admitted to the academy in 1671, and his next great controversial work appeared in 1688. The first five books of his 'Hist. des Variations des Eglises Protestantes' narrate the rise and progress of the Reformation in Germany; the sixth is devoted to a consideration of the sanction given by Luther and Melancthon to the adulterous marriage of the Landgrave of Hesse; the seventh and eighth books contain the ecclesiastical history of England during the reigns of Henry VIII. and of Edward VI., and a continuation of that of Germany. The French Calvinists are discussed in book ix., and the assistance afforded to them by Queen Elizabeth, on the avowed principle that subjects might levy war against their sovereign on account of religious differences (a doctrine which Bossuet asserts to have been inculcated by the reformers), forms the groundwork of book x. Book xi. treats of the Albigenses and other sects from the ninth to the twelfth centuries, who are usually esteemed precursors of the reformed. Books xii. and xiii. continue the Huguenot history till the synod of Gap. The xvth gives an account of the dissensions at Dort, Charenton, and Geneva; and the xvth and last book endeavours to prove the divine authority and therefore the infallibility of the true church, and to exhibit the marks by which Rome asserts her claim to that title. Basnage, Jurieu, and Bishop Burnet may be mentioned among the chief opponents of this work, to a perusal of which, in conjunction with that of the 'Exposition,' Gibbon attributes his short-lived adherence to popery. 'I saw, I applauded, I believed, and surely I fell by a noble hand.'

The fanciful project of a union between the Lutheran and Gallican churches occupied much of Bossuet's attention, and led to a correspondence of deep interest with Leibnitz. On matters of discipline the Bishop of Meaux professed an inclination to be indulgent. On those of faith (concerning which the Council of Trent was his final appeal) he peremptorily declared that there could not be any compromise. The discussion lasted during ten years: it is replete with learning, but it proved utterly fruitless.

In 1682 Bossuet assisted at the general assembly of the clergy of France, convened in order to restrain the aggressions made by Innocent XII. on the *régale*: a right always claimed by the kings of that country, and almost always virtually tolerated by the Holy See, which vested in the French crown the revenues of any vacant bishopric, and the collation to simple benefices within their dominions. The Bishop of Meaux was selected to preach at the opening of this synod; and the four following articles, which were published as its declaration, registered by all the parliaments, and confirmed by a royal edict which forbade the appointment of any person as professor of theology who did not previously consent to preach the doctrines contained in them, are known to be his production. 'The last three,' Mr. Butler remarks, 'are still subjects of dispute; but the Pope's claim to temporal power by divine right has not perhaps at this time a single advocate.'

The first article declares that the power which Jesus Christ has given to St. Peter and his successors, vicars of Christ, relates only to spiritual things and those which concern salvation, and not to things civil and temporal; so that in temporal, kings and princes are not subject to the ecclesiastical power, and cannot indirectly or directly be deposed by power of the keys, or their subjects discharged by it from the obedience which they owe to their sovereigns, or from their oaths of allegiance.

The second article declares that the plenitude of the power which resides in the Holy See and the successors of St. Peter, in respect to spiritual concerns, does not derogate from what the Council of Constance has defined in its fourth and fifth sessions on the superior authority of General Councils.

The third article declares that the exercise of the Apostolical power of the Holy See should be governed by the canons which have been enacted by the Spirit of God, and are respected by all the Christian world; and that the rules, customs, and usages received by the kingdom and churches of France, and approved by the Holy See, should be inviolably preserved.

The fourth article declares, that in questions of faith, the Pope has the principal authority, and that his decisions extend over the universal church and each church in particular; but that, unless they have the consent of the church, they are not irreformable. (Butler's *Life of Bossuet*, p. 105.)

In the dispute with the nuns of Port Royal, relating to the five condemned propositions in Jansenius, Bossuet exerted himself to bring the fair enthusiasts to reason; and in like manner he opposed Quietism and Mad. Guyon, till he incurred opposition from Fenelon and displeasure from Mad. de Maintenon. The controversy with Fenelon is perhaps the single transaction in the life of Bossuet which his admirers would desire not to be remembered. Now that the question is almost as much forgotten, even among theologians, as if it had never existed, if any of the numerous writings by the Bishop of Meaux, to which it gave birth, are ever opened by some curious inquirer, he lays them aside with pain. They create indeed a strong wish that Bossuet had imitated the meekness of his antagonist; and that he had not made the better cause, which he had the good fortune to plead, appear the worse by unseemly violence. He carefully watched the biblical labours of Père Simon, whom he accused of Socinianism. But it is chiefly by his sermons that he is now remembered; although perhaps those by which he attained most celebrity, the *Oraisons Funèbres*, are ill calculated for the English taste. They belong to a style of composition far too theatrical and dramatic for our temperament, but especially adapted to the court of the *grand monarque*, in which religion, like everything else, was reduced to mere show. The death to the world, which Madame de la Vallière voluntarily encountered by her conventual seclusion, is among the most pathetic occurrences related in modern history; but few things are less likely to suggest Christian devotion

than a show tricked out with ecclesiastical pomp, to exhibit, in the presence of the queen consort whom she had injured, the retirement of a royal mistress, discarded by her licentious and unfeeling lover. Three volumes of the Benedictine edition of Bossuet's works are filled with sermons. They are, for the most part, well known; but we will not forego the pleasure of transcribing one passage, which, eloquent as it is, is not unfairly selected, and which certainly has not lost any of its sublimity by the version of Mr. Butler, from which we give it: 'Human life resembles a road which ends in a frightful precipice. We are told of this at the first step we take; but our destiny is fixed; we must proceed. Advance! advance! An invincible power, an irresistible force, impels us forward; and we must continually advance to the precipice. A thousand crosses, a thousand pains, fatigues, and disturbances, vex us on the road. If we could but avoid the terrible precipice! No! advance! You must run on; such is the rapid flight of years. Still on the way we occasionally meet with some objects that divert us, a flowing stream, a passing flower; we are amused by them and we wish to stop. Advance! advance! We see that everything around us tumbles down, a frightful crash! an inevitable ruin! Still here and there we pluck some flowers which fade in our hands, some fruits which vanish while we taste them, which however comfort us for the moment. But all is enchantment and illusion; we are still hurried on to the frightful gulf. By degrees everything begins to fade; the gardens seem less fair, the flowers less lively, the colours less fresh, the meadows less gay, the waters less bright; everything decays; everything falls away. At length the spectre of death rises upon us. We begin to be sensible of our near approach to the fatal gulf! We touch its brink; one step more! and horror now seizes our senses, the head turns, the eyes wander! We must advance! Oh that we might return! But there are no means of returning; all is fallen! All is vanished and gone.' (Butler's *Life of Bossuet*, p. 135.)

The high rank which Bossuet still maintains among his countrymen, appears from the following criticism of La Harpe:—'One man, if I may venture to express my opinion, seems to me to have been more profusely endowed than any other; since in his single person he has attained the highest degree of excellence in subjects belonging either to knowledge or to genius. It is Bossuet. He is unequalled in eloquence, whether it be that peculiar to the funeral oration or to history; whether that which is to sway the religious affections or to guide the controversial judgment. Yet at the same time no one is more deeply acquainted with a science without bounds and embracing many others in itself, that of religion. He appears to me to be the most of latter times who does most honour both to France and to the church: yet nevertheless he was not by any means a universal genius. In physics, in the exact sciences, in jurisprudence, and in poetry, he was altogether unversed.' (*Cours de Littérature*, tom. xii. p. 196.)

A life of Bossuet was published by M. de Burigny, Paris, 12mo, 1761. That written by Mr. Charles Butler possesses a raciness which could not be imparted by any biographer unless he shared the Romish persuasion; and yet, like most other writings of the same distinguished person, it is singularly free from the offensiveness of exclusive prejudices.

BOSSUT, CHARLES, was born at Tartaras, in the department of the Rhone and Loire, August, 11, 1730. His family was, like that of the Bernoullis, Belgian, and expatriated during the civil troubles. He was educated partly by an uncle and partly by the college of Jesuits at Lyons. Happening to meet with the *éloges* of scientific men by Fontenelle at an early age, he was struck with the desire of making his own career resemble those of which he had read: and finding no one to advise with, he wrote to Fontenelle himself, who, though then ninety years of age, answered his letter, begged for an account of his future progress, and said he felt a presentiment that his young correspondent would rise to eminence. This benevolent portend (which is made a prophecy by its fulfilment) brought Bossut to Paris, where he was cordially received by Fontenelle, and introduced to D'Alembert and Clairaut. The former became his friend and instructor, and so well versed did Bossut become in his works, that D'Alembert was accustomed to send those who asked him for explanation to Bossut, as Newton did to De Moivre. Camus, in 1772, procured for him the professorship of mathematics in the

school of engineers at Mézières, and in the same year he was made a corresponding member of the Academy of Sciences. He had previously presented a memoir containing new methods in the integral calculus.

He continued at Mézières sixteen years, during which time he obtained alone, or in conjunction with others, several of the prizes of the academy. He divided one with Albert Euler (son of the Euler) another with the son of Daniel Bernoulli. He published, during this period, his course of mathematics, which for a long time was in high reputation, and procured him the means of living when he lost his professorship by the revolution. He succeeded his friend Camus as member of the Academy of Sciences, and as examiner of the candidates for the artillery and engineers. He was one of the contributors to the *Encyclopædia*, and wrote the introductory discourse to the mathematical volumes. His articles are signed I. B. in that work. He gave, in 1779, a complete edition of Pascal, of whose writings he was a great admirer.

His treatise of Hydrodynamics, and his memoirs on that subject in the memoirs of the academy, contributed materially to the connexion between the theory and practice of that science. It is not that much has been done, but of that little Bossut may claim an important part. In a memoir which gained the prize in 1796, he endeavoured to account for the acceleration of the moon's mean motion by the supposition of a resisting medium.

When he lost all his places by the revolution he went into retirement, and wrote his sketch of the history of mathematics. [BONNYCASTLE.] The second edition of this work he published in 1810: it is a lively and interesting sketch, but written, as it appears to us, in strong colouring. Delambre asserts that a misanthropic feeling, the consequence of his misfortunes, made him unjust towards his contemporaries; but at the same time it is the only compendium which is likely to be useful to the student. Bossut was not likely to be either intentionally unjust or complaisant: Delambre remarks that his impartial intentions would necessarily be a consequence of that 'roideur de caractère' which distinguished him. Perhaps he copied his early friend D'Alembert: he certainly did so in a description of himself in the third person [D'ALEMBERT], the tone of which is curiously like the one in the article cited.

Bossut was originally intended for the church, and was indeed an *abbé*, which title he bore until the abolition of clerical distinctions. He died Jan. 14, 1814. The preceding account is entirely (as to facts) from Delambre's *loge* in the *Memoirs of the Institute* for 1816. We do not know of any other account whatsoever.

BOSTANJI, from *Bostan*, a garden. The class of men who bear this name, who now perform a curious variety of functions, and whose head or chief (Bostanji-Bashi) is one of the grand dignitaries of the Turkish empire, seem originally to have been nothing more than the sultan's gardeners, attached to the imperial residence or seraglio of Constantinople. They still work as gardeners in the sultan's pleasure-grounds at Constantinople and on the Bosphorus, but the more conspicuous of their duties are, to mount guard in the seraglio, to row the sultan's barge, to row the caïques of all the officers of the palace, to follow those great men, on foot, when they ride on business through the city, and to attend to the execution of the numerous orders of the bostanji-bashi. They were aggregated with the janissaries, with whom they formerly did military duty in the field, but the bostanjis were not suppressed at the sanguinary dissolution of that turbulent militia, although their number has been considerably decreased. When the Ottoman Court was in its splendour, the bostanji corps amounted to 2500 men, who were divided into ortas, or companies, like the janissaries. The distinctive part of their costume was an enormous bonnet, or caonk, made of scarlet cloth.

The bostanji-bashi, who has the rank of a pasha, is governor of the seraglio and the other imperial residences. He is inspector-general of the woods and forests in the neighbourhood of Constantinople. The shores of the Bosphorus and the Sea of Marmora, from the mouth of the Black Sea to the Straits of the Dardanelles, are under his jurisdiction, and formerly no person whatsoever could build or even repair a house on those coasts without his permission. For this license fees were exacted, which were generally fixed in the most arbitrary manner. Whenever the sultan makes an excursion by water (and in the fine seasons

he rarely travels in any other way) the bostanji-bashi stands or sits behind him, and steers the magnificent barge, which is rowed by the bostanjis. This brings him into frequent contact and conversation with the sovereign, who never appoints any but personal favourites to the post. At court the bostanji-bashi is almost as great a man as the kislar-agma (chief of the black eunuchs) or the selictar (the sultan's sword bearer). He used also to exercise the functions of provost-master-general, presiding at the bow-stringing of the Turkish grandees when the execution took place within the walls of the seraglio, and superintending the tortures applied in the prison of that palace, to force from obstinate ministers and government functionaries the confession of their guilt and the disclosure of their property, which latter was always confiscated to the sultan.

Except when at the helm of the imperial barge, the bostanji-bashi used rarely to be seen abroad by day-light; 'no doubt,' says D'Ohsson, with much naïveté, 'on account of the sensation produced by the presence of the supreme minister of executions.'

Another very lucrative duty attached to this composite office was the *inspection* of the trade in wine, and lime, or mortar for building, carried on in the capital and its vicinity. Of late years, however, since Sultan Mahmoud has become a reformer, both the money-getting branches of the office, and the more horrible functions of the bostanji-bashi, have been considerably abridged; and in time we may hope to see him as harmless a character as the commander of a royal yacht or a court chamberlain in Christendom.

BOSTON (Lincolnshire), a sea port, bor., and m. t., on the Witham; partly in the wap. of Skirbeck, and partly in that of Kirton. The church is in 53° 10' N. lat., 0° 25' W. long. Its measured distance from London is 116 m.; its computed distance, in a straight line, 93 m. It is 36 m. S.S.E. of Lincoln. Previous to the Reform Act, it was in the division of Holland; it is now in the parts of Kesteven and Holland, which form the S. division of the co., and is one of the polling-places for the election of knights of the shire. 'A small addition is made to the par. by the Boundary Act to constitute the new borough.' (*Corp. Rep.*) These additions are the parish of Skirbeck, the hamlet of Skirbeck Quarter, and the fen-allotment of Skirbeck-Quarter. Boston has sent two members to parliament since the 37th Henry VIII., when it was first made a free borough. It sent members to three councils in the reign of Edward III.

Origin, History, Antiquities.—The origin and antient history of Boston are obscure. The great canal or drain, called the *Car-dyke*, which extends forty miles in length from the Welland, in the S. of the county, near Lincoln, to the Witham, is generally attributed to the Romans. It is stated on various authorities that Roman coins have been found on the banks of this dyke. The *Foss-dyke* is a continuation of the drain from Lincoln to the Trent at Torksey, and appears to have been the work of the same hands. The *Westlode*, another antient drain in the parts of Holland, carries off the upland waters, by its communication with the Welland at Spalding. The old sea-dyke is a great bank erected along the coast, in order to render the drains safe from the influx of the ocean. (*Dugdale's History of Embanking and Draining.*)

'The marshes and fens which had been hitherto, or at least for some previous centuries, extensive lakes of stagnant water, were now drained, and furnished large tracts of rich land, suitable for every agricultural purpose. The country was intersected with canals, and guarded from the future inroads of the sea by stupendous works of embankment, erected under the directions and by the skill of the Roman generals and commanders.' (*Noble's Gazetteer of Lincolnshire.*) Several of the great works here alluded to are said to have been performed in Nero's time, and during the procuratorship of Catus Decianus. The county of Lincoln was included in the Roman province of *Flavia Cæsariensis*, and there were several military stations in different parts of the county. Whether Boston was one of them is a disputed point among antiquaries. By one authority it is considered, with a great degree of plausibility, as the *Causennis* of the Romans. (*Reynolds's Commentary on the Itinerary of Antoninus.*) To those who are curious on the subject of these antient military stations, the *Itinerary* of Dr. William Stukeley, and his 'account of Richard of Cirencester,' may be consulted with satisfaction. Three of the principal Roman roads were carried through Lincolnshire, but none of them passed through Boston, and it

is by no means certain that there was a branch road to it. Lincolnshire was a part of the kingdom of Mercia during the heptarchy, and the Saxon Chronicle informs us that 'St. Botolph built a monastery here, A.D. 654,' which existed till the county was ravaged by the Danes, A.D. 870. Bede says that St. Botolph had a monastery at *Icanhoe*. Leland claims *Lincoln* as the site of *Icanhoe*, the spot where the monastery was built. From the testimony of many antiquaries, Boston appears to have been the antient *Icanhoe*, and the site of St. Botolph's monastery. Some topographers are satisfied with concluding that Boston is a corruption of Botolph's town. Dr. Stukeley says, 'Icanhoe, Icanhoc, or as it was commonly called, according to Dugdale, Wenko, is supposed to have been the antient name of Boston;' and also that it was the last bounds northwards of the Iceni; he therefore concludes its old name was *Icanhoe*. (Thompson's *Collections for a History of Boston*.)

Boston not being mentioned in 'Domesday Book,' Mr. P. Thompson supposes that it was included with Skirbeck, for 'at the present day, it is very nearly surrounded by Skirbeck, and appears to occupy the very centre of the land which, in the Domesday Survey, was returned as belonging to that parish.'

Modern History.—Little worthy of notice is recorded of Boston during the early part of the Norman government. In the year 1204 it was a wealthy town; for when the *quinzieme* was levied (a duty which was raised on the fifteenth part of land and goods, at the several ports of England), the merchants of Boston paid 780*l.*; London paid 836*l.* (Madox's *Hist. of the Exchequer*.) London paid the largest sum of any port, and Boston was the second in amount. (Thompson.) A great annual fair was held at Boston; at what date established is unknown, but it is on record that it was resorted to from Norwich, Bridlington, and Craven during the thirteenth century. Articles of dress, wine, and groceries formed part of its commerce. In 1281 part of Boston was destroyed by fire; and in 1286 a great part of the town and the surrounding district suffered from an inundation. This flood is probably the same as that mentioned in *Stowe's Chronicle*, p. 229. 'An intolerable number of men, women, and children were overwhelmed with the water, especially the town of Boston, or Buttolphe's-towne, a great part whereof was destroyed.' It was one of the towns, appointed by the statute of staple (27th Edward III.), where the staple of 'wools, leather, woofels, and lead,' should be held. A staple town is described by Weever as a 'place to which, by authority and privilege, wool, hides, wine, corn, and other foreign merchandize are conveyed to be sold; or, it is a town or city whither the merchants of England, by command, order, or commandment, did carry their lead, tin, or other home produce for sale to foreign merchants.' Many merchants from the important commercial towns of the continent resided at Boston during this early period, and it is probable that both the above characteristics of a staple town were combined in it. It also ranked high as one of the sea-ports of the kingdom, its situation at the mouth of the Witham giving it advantages equal to those of any other port on the eastern coast. The advantages which Boston possessed as a place of trade, brought over the merchants of the Hanseatic league, who established their guild here. In 1359 Edward III. assessed eighty-two towns to provide ships and men for the invasion of Brittany. 'Boston furnished to this navy seventeen ships and 361 men, a greater number of vessels than was supplied by Portsmouth, Hull, Harwich, or Lynn; and equal in number of ships, and superior in number of men to those furnished by Newcastle; out of the eighty-two towns, only eleven sent a superior number of ships to Boston.' (*Archæologia*, and Thompson's *Collections*.)

About 1470 the trade of Boston received a check in consequence of some dispute, when 'one Humphrey Littlebyri, marchant of Boston, did kill one of the Esterlinges;' (supposed to be the same as the Hanseatic merchants); 'this caused the Esterlinges to quit Boston, and syna the town sore decayed.' (Leland's *Itinerary*, vol. vii.) At the time when Leland wrote his account of Boston (1530), the commerce of the town had begun to decline. He speaks of the 'great and famous fair,' and of the 'old glory and riches that it had,' as matters of history, and says, 'the staple and the stilliard houses yet there remayne, but the stilliard is little or nothing at all occupied.' The stilliard-house was the antient custom-house, and the merchants of

the steelyard were so called, from the circumstance of their trading almost entirely by weight, and using the steelyard as their weighing apparatus. Boston was still further reduced by the dissolution of the monasteries by Henry VIII. Some amends were made by Henry in granting the town a charter of incorporation; it was thus made a free borough, and enjoyed many important privileges. By this charter, granted in the 37th of Henry VIII., the borough is at present chiefly governed. Philip and Mary, in the first year of their reign, endowed the corporation with a rich grant of lands and messuages, to assist in maintaining the bridge and port, for supporting a school in the town, for finding two presbyters for the celebration of divine worship in the parish church, and for the maintenance of four beadsmen to pray there for ever for the good and prosperous state of the queen while living. This valuable endowment, according to the original record, in the Chapel of the Rolls, consisted of fifty messuages, ten gardens, and 227 acres of land, situated immediately near Boston. The late municipal inquiry however shows the property to be 511 acres, 1 rood, and 21 perches of land, and some houses, and yields a yearly rent of 2142*l.* 16*s.* 6*d.* This difference is accounted for partly by a presumed inaccuracy in the measurements, and partly by the circumstance of many allotments having been made to the corporation under Inclosure Acts. (*Corporation Reports*.)

During the reign of Elizabeth the port continued to decline, though she granted the mayor and burgesses a charter of admiralty, giving them power to levy certain duties on ships entering the 'Norman Deepes.' In 1571 Boston and the surrounding district suffered much from a violent tempest, an account of which is given by Hollinshed. During the latter part of that century it was visited by the plague, and in 1625 it had a similar visitation. In 1643 Boston was strongly fortified for the king and parliament, but it was soon crowded with the parliamentary soldiery, and made the head-quarters of Cromwell's army. The principal men of the district favoured the cause of the Protector. In June, 1643, Colonel Cavendish defeated the parliamentary troops at Donington, near Boston, and soon after Cromwell removed his quarters to Sleaford. On the restoration of Charles II. a warrant was issued, by which some of the officers of the borough were removed, in consequence of the favour they had shown in the cause of Cromwell. About the middle of the eighteenth century, the commerce of Boston fell into still greater decay, 'through the ruinous state into which the river and haven had fallen, in consequence of neglect and mismanagement, and from errors committed in the execution of works of drainage.' (Thompson.)

Ecclesiastical History.—Dr. Stukeley supposes that the monastery of St. Botolph stood 'on the south of the present church;' he saw 'vast stone walls dug up there, and a plain leaden cross.' Nothing is known of this establishment except the dates of its foundation and destruction, which have been mentioned. The Dominican, or black friars, were established at Boston in the early part of the thirteenth century; in A.D. 1288 their church was burnt in a fire (Tanner's *Notitia Monastica*); but they were afterwards re-established. The Carmelite friars had a priory at Boston, founded in 1301, and various small grants of land from pious individuals, and from Henry IV.; and their order was patronized by Thomas Earl of Rutland. Not a vestige of this priory remains: at the dissolution of the religious houses, its site was granted to the mayor and burgesses of Boston. The Augustine friars had also an establishment at Boston, founded in 1307; and also the Franciscans, or grey friars, one founded in 1332, and under the wardenship of the monastery at York. The sites of these houses were granted to the corporation at the Reformation. Some other minor religious houses are recorded as having existed at Boston. Several associations, called *Guilds*, existed at Boston, some of which seem to have had a mixed character. The monks are supposed to have been their first founders. The guild of St. Botolph was a fraternity of merchants, which appears to have had only mercantile objects in view. The guild of Corpus Christi is thought to have been a religious one; at the Dissolution it was called a college. The guild of the Blessed Mary was one of greater importance, and in its purposes partly religious. Its hall is at present used by the corporation for their judicial proceedings, public dinners, &c. The council-chamber contains a portrait of Sir Joseph Banks, by Lawrence, which was presented by him to the corporation on his election to the office of recorder of Boston.

In 1809. The guild of St. Peter and St. Paul was a religious establishment, and had a chapel, or an altar in the parish church. St. George's guild was a trading community, and respecting that of the Holy Trinity nothing is known. The possessions of all these guilds were vested in the corporation of Boston when the religious houses were dissolved.

The first stone of the present church of St. Botolph was laid in 1309, but the existence of a church at Boston is recorded so early as 1090. The vicarage is now in the gift of the corporation, and its annual value is 360*l.* (*Ecclesiastical Reports*), which is paid out of the grant of Philip and Mary. This church is one of the largest parish churches without transepts in the kingdom. It is 245 feet long, and 98 feet wide within the walls. Its tower is one of the loftiest in the kingdom, being 300 feet high, and ascended by 365 steps. The tower, which is visible at sea for more than forty miles, is surmounted by an elegant octagonal lantern, which is a guide to mariners on entering the Boston and Lynn Deep. 'This lantern,' says Rickman, 'is panelled throughout, and each side is pierced with a large two-light window, having double transoms; this composition gives to the upper part of the steeple a richness and lightness scarcely equalled in the kingdom. The church is principally decorated, and the tower perpendicular, both excellent in their kind. The chancel is partly decorated and partly perpendicular, and there is a good south porch. The tower, which is one of the finest compositions of the perpendicular style, is a complete arrangement of panelling over walls and buttresses, except the belfry story, in which the window is so large as nearly to occupy the whole face of the tower.' (Rickman on *Gothic Architecture*, p. 251.) The altar-piece, set up in 1741, is in four compartments, and represents the Crucifixion, the Annunciation, the Presentation in the Temple, and the Ascension; it is a copy from the celebrated one by Rubens in the great church at Antwerp. In a chamber over the south door is the parish library, which contains several hundred volumes, among which are many valuable and scarce works on divinity; it was formed by Anthony Tuckney. (Britton's *Architectural Antiquities of Great Britain*.)

The chapel of ease, which was erected by subscription in 1822, is a perpetual curacy, in the gift of the subscribers, for fifteen years from the time of its erection; after which time the corporation become its patrons. There was formerly a church called St. John's, which was taken down nearly 200 years ago; its burying-ground is still used as a place of interment. The dissenting places of worship in Boston are for Independents, Wesleyan and Primitive Methodists, General and Particular Baptists, Unitarians, and Quakers. Most of these denominations have their own Sunday-schools, which altogether educate nearly a thousand children.

The Haven.—The history of the Witham, and the harbour, and the influence of the drainage of the fens upon them, abound with interesting details. The changes which have taken place from local circumstances appear to have greatly affected the prosperity of the town. Speaking of the fall in the Witham from Lincoln to the sea, Sir William Dugdale says, 'the descent of the stream is so little, that the water, having a slow passage, cannot keep it wide and deep enough either for navigation or for draining the adjacent marshes.' It appears, notwithstanding, that during the commercial prosperity of Boston, ships of a heavy burden could get up to the town; it appears also that in those days great attention was paid to the removal of obstructions, and to the cleansing of the river. In 1751 it was stated that thirty years before a ship of 250 tons could get up to Boston; but that then even a small sloop of forty or fifty tons, drawing only six ft. of water, could not sail to or from the town except at a spring-tide. One of the causes of this decay of the haven is attributed to the diversion of the waters of the neighbouring fens from their antient entrance into the Witham, above Boston, which had formerly discharged themselves in such large quantities, as to assist in scouring away the sediment brought up by every tide. (Kinderley's *Report*, and Chapman's *Facts and Remarks relative to the Witham*.) An act of parliament was obtained in 1762, empowering the corporation to cut a canal, and to construct a great sluice, to assist in the drainage, and to remove the impediments in the navigation of Boston haven. This was done, and the sluice was opened in 1766. Various subsequent acts of parliament for minor improvements in draining, deepening,

and embanking have also been obtained. The most favourable results have followed these measures, which began to be visible as soon as the larger works were completed.

Town Government, Population, Expenses, &c.—Boston has been chiefly governed by the charter of Henry VIII., already mentioned. The title of the corporation was, 'The Mayor and Burgesses of the borough of Boston'; the officers being a mayor, recorder, deputy-recorder, twelve aldermen, eighteen common councilmen, coroner, town-clerk, judge of the court of admiralty, gaoler, and subordinate officers connected either with the borough or port. Freemen were created by birth, servitude, gift, and purchase. The number of resident freemen was about four hundred and eighty; that of non-residents, about forty. Under the new Municipal Act, it is placed in the second section of the boroughs which are to have a commission of the peace, to be divided into three wards, to have six aldermen, eighteen common-council men, and the other officers provided in the Act, by which the government of the borough will be materially changed. The court of quarter-sessions is held before the mayor, deputy-recorder, and other magistrates. There is a court of requests for the recovery of small debts, which seems to be beneficial. The borough gaol is very inadequate for that classification of the prisoners which the law requires, as 'there is no provision for a separation of the untried from the convicted,' and the young offender has to associate, day and night, with the hardened culprit. The number of prisoners committed to this gaol was, in 1830, 308; in 1831, 290; in 1832, 289. For details respecting the income and application of the corporate funds, we refer to the 'Corporation Reports.' The town is but indifferently supplied with water; attempts have been made to supply this deficiency by boring, but they have not been successful. In 1828, a depth of 600 feet was attained without any favourable result, and the object was then abandoned. In dry seasons, the inhabitants have to buy water. It is well supplied with coal by the coasting vessels from Sunderland, Newcastle, &c. Its foreign trade is chiefly with the Baltic, whence it imports hemp, iron, timber, and tar; it exports corn, particularly oats. 'In the years 1811 and 1812, one-third of the whole quantity of oats which arrived in the port of London, were shipped from Boston.'

The borough and parish of Boston contains 7923 acres 39 poles. Its pop., in 1801, was 5926; in 1811, 8180; in 1821, 10,373; in 1831, 11,240; of whom 5094 were males, and 6146 females. Under its extended boundary by the Reform Act, the pop. of the borough is 12,818.

Families employed in agriculture, 149; in trade, manufactures, &c., 1234; not comprised in the above, 1104.

Annual value of real property, in 1833, 40,000*l.*

Assessed taxes, for years ending 5th of April, 1829, 3064*l.* 13*s.* 6*d.*; 1830, 2979*l.* 1*s.* 6½*d.*; 1831, 2952*l.* 14*s.* 7*d.*; 1832, 3005*l.* 4*s.* 6½*d.*

Parochial assessments, for years ending 25th of March, 1829, 4863*l.* 3*s.*; 1830, 8810*l.* 18*s.* 6*d.*; 1831, 8451*l.* 3*s.*; 1832, 9091*l.* 19*s.* 6*d.*; 1833, 8578*l.* 19*s.*

Number of houses, in 1833 (as charged to the householdy), 10*l.* and under 20*l.* rent, 310; 20*l.* and under 40*l.*, 161; 40*l.* and upwards, 79. (*Municipal Report*.)

Public Buildings, Trade, &c.—The town on the E. side of the river consists of one long street, called Bargate, the market-place, and some minor streets; there is another long street on the W. side of the river, called High-street. The market-place is spacious, and very suitable for the well-attended and well-supplied fairs and markets which are held—the market days are Wednesdays and Saturdays, and are particularly noted for sea and river fish. Immense numbers of sheep and horned cattle are sold at the markets, and there are convenient areas in several adjacent parts of the town, where the cattle are folded and penned during the time of sale. As an out-port in the centre of a very fertile agricultural district, equally adapted to pasturage and corn, and with a breed of cattle of a very fine description—being remarkably large and famed for their symmetry—Boston is favoured above many coast-towns. The drainage and inclosure of the neighbouring fens have materially increased its internal means of wealth, by enabling it to bring into its market immense quantities of agricultural produce; while the conveyance of this produce to London and other places gives occupation to its shipping. There are some few manufactures at Boston for sail-cloth, canvass, and sacking; there are also iron and brass founderies. By means of the Witham and the canals connected with it, Boston has a navigable com-

munication with Lincoln, Gainsborough, Nottingham, and Derby, and by them with all the inland towns. The new market-house, erected in 1819, includes a convenient corn-market; there are also buttier, poultry, fish, and stock markets. The assembly-rooms are over the new market-house, which altogether forms a very handsome building, E. of the haven, and near the iron bridge. This bridge, which is of a single arch, and of cast-iron, is an elegant structure; it was commenced in 1802, and opened for carriages in 1807. Its convexity is so slight, that the road over it is nearly horizontal. Its dimensions are 86 ft. 6 in. in span, and 39 ft. broad; it was built at the expense of the corporation, and cost, including the purchase of buildings, 22,000*l.* The petty sessions for the wapentakes of Kirton and Skirbeck are held every Wednesday. The custom-house is a plain, substantial building, near the quay; it was taken down and rebuilt in its present shape about a century ago. The poor-house is in St. John's Row; it was built about the year 1730. 'The corporation have no share in its management' (*Corporation Reports.*) The dispensary, commenced in 1795, is supported by subscription; the patients generally are visited at their houses. The town is lighted with gas. There are two subscription libraries and two news-rooms. The amusements of the theatre are not so well encouraged as formerly.

Education and Charities.—A grammar-school was provided for by the rich grant of Philip and Mary in 1554. The building was erected by the mayor and burgesses in 1567; it is in the mart-yard, so called from the great annual fair having been held in it. The school-room is described as a spacious, lofty, and airy room, and there is a high wall round the play-ground. The corporation have the appointment of the schoolmaster, to whom they pay 220*l.* per annum. A portion of this sum is allowed during the approbation and pleasure of the corporators body. The corporation lately expended the sum of 1800*l.* in providing a house for the master, who pays them a rent of 40*l.* a-year; he also pays an usher 60*l.* a-year. An annual sum of 80*l.* is paid by the corporation to the late master. The school was under his charge thirty-five years, and the number of pupils, which had formerly been large, decreased to three. The pension was given him to induce him to resign his office, and a most desirable change has been produced; the number of pupils now being forty, nearly all of whom are free boys. The usual education of a grammar-school is free to the children of every inhabitant of the parish; for a commercial education, a guinea a quarter is charged. The children of members of the Established Church are taught its catechism, those of Dissenters are not. (Further particulars in *Carlisle's Endowed Schools*, and in the *Corporation Reports.*) The Blue Coat School, established in the year 1713, by subscriptions and donations, is for the education of boys and girls. The master and mistress have 100*l.* a-year. The number of children in the school is 30 boys and 25 girls. The National and British Schools were both established in the year 1815; at each of them one penny a-week is paid by the children. The National School contains 94 boys and 80 girls. The British or Public School, 150 boys and 70 girls. There is also an Infant School, which takes charge of 120 children. Loughton's Charity School was established by a gentleman of that name in 1707; it was intended for the poorest freemen's sons, and for placing out a certain number of them as apprentices every year. There have been several benefactors to this school since its founder; in 1819 its annual income was 200*l.*, since that time it has increased. The number of pupils is thirty-five; the sum of money given to them as an apprentice-fee, on their attaining the age of fourteen, varies according to the state of the funds at the time they leave the school; it is generally 10*l.* The names of other charities sufficiently explain their object: they are a Bible Society, a Dorcas Charity, the Poor Freemen's and Apprentices' Charities.

Two interesting remains of antiquity have yet to be noticed,—the *Kyme Tower*, and the *Hussey Tower*. The former is situated about two m. E. of Boston; it is of brick, quadrangular, and has an octagonal turret at its south-east angle, containing a flight of about twenty steps. It is said to have been a baronial residence of the Earls of Richmond; it passed into the Rochford family, from thence into that of the Kymes, and finally escheated to the crown, in consequence of some political transgression of its owner. It is now the property of the Dean and Chapter of Westminster.

The *Hussey Tower* is situated in the town, near St. John's Row, and is the remains of a baronial residence of *Lev Hussey*. From what is now standing no idea can be formed of the original form or extent of this building. (*Thompson's Collections for a History of Boston; Communications from Boston, Spalding, &c.*)

BOSTON. The capital of the state of Massachusetts is situated in 42° 21' N. lat., and 71° 4' W. long., at the bottom of Massachusetts Bay, on a peninsula above two miles long, and in no part more than one mile broad. The narrow isthmus by which the peninsula is joined to the main land is called Boston neck, and the arm of the sea which washes the peninsula on its N. and W. sides, is named Charles River.

Boston was founded about the year 1630, by the settlers established at Charlestown, on the shore of Massachusetts Bay, contiguous to Boston peninsula. The name was given in compliment to the Rev. John Cotton, who had been a clergyman at Boston in Lincolnshire, from which place he was driven by the religious persecution, to which the original settlement of the New England Colonies must be ascribed.

The early settlers, themselves the victims of persecution for conscience' sake, seem to have entertained no enlarged ideas of religious freedom. They claimed, and by their voluntary expatriation took effectual means for securing, the right of regulating their own church discipline and doctrine, but they did not learn the justice of tolerating religious systems different from their own. At the very first court of election held in the colony, a law was passed enacting that 'none should thereafter be admitted freemen, or be entitled to any share in the government, or be capable of being chosen magistrates, or even of serving as jurymen, but such as had been or should hereafter be received into the church as members.' It would appear from this, that 'the pilgrim fathers' did not indeed disapprove of religious persecution, but only objected to being made its victims.

The scheme of taxing America by the British parliament, met no where with a more decided opposition than in Boston. The Stamp Act, which received the royal assent on the 22nd of March, 1765, was to come into operation on the 1st of November of the same year; but previously to that day serious riots took place in the streets of Boston; the building intended for the reception of the stamps was pulled down, and the lieutenant-governor was forced to quit the city. From that time the inhabitants of Boston took on all occasions a prominent part in the dispute with England, which led to the recognition of the independence of the States. One of the most memorable events that accompanied this dispute, was the destruction in Boston harbor of the cargoes of tea which, burthened with an exceptionable duty, had been consigned to that port for sale by the East India Company. On the arrival of these consignments in December, 1773, the inhabitants of Boston held meetings in their town-hall, to consider of means for opposing the introduction of the tea, and negotiations to that end were entered into with the governor. Finding there was little probability of these negotiations coming to a satisfactory issue, a party of men, about fifty in number, disguised as Mohawk Indians, proceeded late in the evening on board the tea ships then lying at the wharf, and emptied the contents of every chest into the sea; it was never discovered who the individuals were by whom this daring act was committed. As one of its consequences, the British parliament passed the Act known as 'the Boston Port Bill,' by which the landing and shipping of goods at the town or harbour of Boston were made illegal, until full compensation should be made by the town to the East India Company, and until the king in council should be satisfied of the re-establishment of order in the town. By a subsequent Act of the same session (1774), the charter of the province was in effect subverted, by vesting in the crown the appointment of all municipal and judicial officers; and by a third Act, the governor was invested with power to send for trial to England all persons accused of offences against the revenue, or of rioting in the colony.

Early in the revolutionary war Boston became the scene of hostilities. The royalist forces under General Howe, having made this town their head-quarters, were blockaded by the American troops under General Putnam, who occupied the heights of Dorchester south of the town, and the eminence called Bunker's Hill on the north, separated from the peninsula by Charles River. In June, 1775, the English attacked this last-named post, and after having

been twice driven back, succeeded in dislodging their opponents, but with a loss of 1100 killed and wounded, including eighty-nine officers. In the heat of the action, Charlestown, a suburb of Boston on the north side of Charles River, containing several hundred houses, was set on fire by the British and entirely consumed. In the following month General Washington, then newly appointed commander-in-chief of the American forces, arrived before Boston, which he continued to invest until the following February. He then commenced offensive operations, and having with a considerable force obtained possession of the heights of Dorchester, and thrown up some works by which the town was commanded, the British general was forced to evacuate the town, which Washington entered on the 17th March, 1766.

With the exception of a spot in the south-western part of the city, called the Common, and containing about seventy-five acres, the whole of the peninsula is occupied by buildings. The city is connected with the main land by six bridges—Charles River Bridge, leading to Charlestown on the north, is 1503 feet long; West Boston Bridge, leading to Cambridge port on the west, is 7810 feet long; between these two is Canal Bridge connected with Lechmere point, 2796 feet long; two bridges unite the peninsula to a suburb on the main land, called South Boston; and the sixth connexion with the main land is by means of a mill-dam, which serves also for a bridge on the south-west side of the city: this mill-dam is nearly two miles long, and 50 feet wide.

Boston Bay or harbour is formed by numerous small islands, on one of which, at the entrance, is a light-house sixty-five feet high with a revolving light. The islands, and the numerous shoals, render it necessary for vessels to take on board a pilot. There is in general sufficient depth of water within the bay at all times of the tide, to enable the largest vessels to reach the town where they are moored alongside wharfs, of which there are about sixty, some of them of extensive dimensions: one, called 'Long Wharf,' is 550 yards long; and another, called 'Central Wharf,' is more than 400 yards long and 50 broad, with a range of lofty brick warehouses along its entire length: vessels lie here in perfect safety from whatever quarter the wind may blow. The entrance to the harbour is so narrow as scarcely to admit two ships abreast; it is defended by forts constructed on several of the islands, close to which ships must pass.

In the oldest part of the town, those streets which remain as they were originally planned, are narrow and crooked, the houses are of small dimensions, and plainly built of wood. The more modern parts of the city are planned in better taste, the streets are wide and straight, and the houses spacious: several are constructed of granite. Many of the old streets have also been improved, and the ancient wooden buildings replaced by others of brick and stone. Among the public buildings are the State House; the County Court House; the Municipal Court House; Faneuil Hall, in which the citizens hold their public meetings; two theatres, and several halls belonging to different associations. The State House stands on an elevated spot, and commands an extensive view of the bay and surrounding country: it contains a fine statue of Washington. There are in the city between forty and fifty churches, some of which are handsome buildings. St. Paul's Church, in Common Street, contains a monument to the memory of Dr. Warren, who was killed at the battle of Bunker's Hill. Boston, which was the birth-place of Franklin, is also the place of his burial. He was interred in the Granary ground, where the spot is marked by a cenotaph.

The progress of the city will be seen from the following statement of the amount of its population at various dates from the beginning of the last century:—

Year.	Population.	Year.	Population.
1700	7,000	1800	24,937
1722	10,567	1810	33,250
1742	16,382	1820	43,298
1752	17,574	1825	58,281
1765	15,520	1830	61,392
1790	18,038		

From this statement it appears that the increase since the beginning of the present century has been 146 per cent.: the numbers given are exclusive of the population of Charlestown. The whole are free citizens, the constitution of the state having declared that 'all men are born

free and equal,' which declaration was decided by the supreme court of Massachusetts in 1783, to be equivalent to the abolition of slavery.

The trade of Boston is very extensive, both with foreign countries and with the southern states of the American Union, to which it sends large supplies of salted meat and cured fish, as well as domestic and European manufactures, receiving in return cotton, rice, tobacco, staves, and flour.

The quantity of shipping employed from, and belonging to, the port of Boston, and the nature of their employment, may be seen from the following table:

	1829.		1830.		1831.	
	Ships.	Tons.	Ships.	Tons.	Ships.	Tons.
Foreign Trade	817	179,361	830	189,399	820	200,000
Coasting Trade	805	60,678	590	52,673	600	58,000
Whale Fishery	159	47,806	95	37,024	150	45,000
Cod and Mackerel Trade .	1,400	61,705	1,600	60,281	1,850	65,000
	2,881	349,450	3,095	392,377	3,220	368,000

The value of imports and exports from and to foreign countries during the same years, was as follows:

	1829.		1830.		1831.	
	Imports.	Exports.	Imports.	Exports.	Imports.	Exports.
Russia	£. 318,750	£. 28,020	£. 166,666	£. 43,329	£. 384,645	£. 36,750
Sweden and Denmark .	94,166	23,853	76,041	89,719	67,260	59,500
Brazil	59,791	69,916	71,197	73,677	82,604	89,276
Great Britain	838,333	79,916	735,520	31,250	1,256,250	41,666
British East Indies . . .	256,041	87,063	125,000	69,708	142,708	88,750
West Indies . . . . .	..	..	..	..	19,166	16,770
North Ame- rican Colonies } . . . . .	..	..	12,854	66,562	19,166	110,625
Cuba and Spanish West Indies }	153,125	219,565	248,968	187,916	414,854	224,375
China	239,583	141,145	200,504	39,270	158,750	67,708
Other countries	416,666	416,666	833,333	416,666	208,333	416,666
	2,271,456	1,041,662	1,981,073	981,007	2,703,796	1,152,000

The imports consist principally of woollen, cotton, linen, and silk manufactures, sugar, coffee, indigo, hemp, and iron; the quantity of iron annually imported amounts to 15,000 tons. The exports consist of fish and fish oils, salted meat, flour, soap, and candles, with a small quantity of the cotton manufactures of the country. The amount of tonnage frequenting the port from foreign places during the three years from 1829 to 1831 was:—

	Inwards.	Outwards.
1829	120,952	89,114
1830	107,007	91,722
1831	130,717	109,685

nearly the whole of which was under the American flag; the amount of customs duties collected at this port in 1831 was 5,227,592 dollars, or 1,089,081 $\frac{1}{2}$ sterling.

Boston contained in October, 1833, twenty-five banks, with an aggregate capital of upwards of sixteen millions of dollars. The highest rate of dividend made by any of these establishments is seven per cent. per annum, and the lowest is five per cent. per annum: the greatest number divide six per cent. annually. [For further particulars respecting the banks of Boston see the article BANK and BANKING, vol. iii. page 388.] There are also twenty-nine companies incorporated for fire and marine insurances, the aggregate of whose capitals is 8,100,000 dollars.

The trade of Boston is facilitated by means of the Middlesex canal, which was completed in 1808, and runs from Boston harbour to Merrimack river at Chelmsford, thus opening a cheap communication with the central part of New Hampshire. More than 120 stage coaches leave Boston, and as many arrive daily with passengers to and from all parts of the Union.

The 'General Court of Massachusetts,' consisting of a senate and house of representatives, the former having forty and the latter an indefinite number, sometimes exceeding 500 members, meet at Boston twice in every year, in January and May. The supreme courts of judicature for the state are likewise held in the city. There is also a court consisting of three justices, styled the *police court* for the city of Boston, and a *municipal court*, consisting of one judge, who has cognizance of all crimes, not capital, committed within the city and the county of Suffolk, in which it stands.

Boston contains several literary institutions. Among these the Athenæum has a library of 25,000 volumes, and a museum with a large collection of rare coins and medals. The Massachusetts Historical Society, the Boston Library Society, and the Columbian Library have likewise good collections of books. The New England Museum is one of the most extensive in the United States. There are, besides, a Gallery of Fine Arts, an Academy of Arts and Sciences, and a Mechanics Institution in the city, which are liberally supported.

The Massachusetts General Hospital, which was founded in 1818, has been handsomely endowed by the joint contribution of the state and of individuals. An Hospital for the Insane and a House of Industry are supported by the inhabitants of the city. The institution for the Education of the Blind is perhaps one of the best of its kind in the world. Its establishment is of recent formation, having commenced in 1833 with slender means, and undertaking at first the instruction of only six poor blind children. The success attending this first experiment proved so satisfactory that within six months the state legislature made an appropriation of 6000 dollars per annum to the institution, upon the condition that it should receive and educate, free of cost, twenty poor blind persons from the state of Massachusetts. A private individual, Mr. Perkins, gave up his own residence, one of the best houses in the city, for the purposes of the institution, on condition that the sum of 50,000 dollars should be contributed for its support by other individuals, a condition which was satisfied within one month. At the date of the last annual report (15th January, 1835) the institution contained twenty-two female and twenty male scholars, being all that the building could contain. The studies of the children comprise arithmetic, grammar, geography, history, the French and Latin languages, to which may be added the study of music, both vocal and instrumental, as a science, with a view to enabling the pupils to obtain a livelihood, either as teachers or organists. One class is instructed in natural philosophy, and several pupils are studying algebra and astronomy with success. The children are also taught mechanical or handicraft labour. They sew, knit, braid, and weave, and can make mattresses, cushions, door-mats, and baskets: these occupations being considered advantageous, not only as the means of earning their support, but also for imparting a facility of exercising the physical powers of the pupils. The point in which the managers of the institution have been most successful is the art of printing in raised characters, in which their performances are said to excel those of any institution in Europe. A specimen of this method of printing, which fully justifies this assertion, is a quarto volume of sixty-nine leaves, containing an epitome of Lindley Murray's English Grammar, the cost of which in sheets is little more than four shillings sterling. The institution is provided with a printing-press, and much of the work, such as laying on the sheets and working off the impressions, is done by the pupils themselves. They have also a perfect assortment of the type required for printing in raised characters, and have already printed, besides the Grammar, the 'Acts of the Apostles,' a child's book of first lessons, and a hymn-book. In June, 1835, they were engaged in printing a spelling-book, and were preparing for press the whole of the New Testament. The superiority of the books printed in raised letters at this Boston press over others that we have seen consists in the clearness and perfect formation of the letters, and in the economy as regards the space which they occupy. In the books printed at Paris there are on a page of eight inches by seven, or fifty-six square inches, 408 letters; at Edinburgh by the improved method 590 letters are included in that space, while at Boston, a page of equal dimensions is made to contain 787 letters, being nearly double the contents of the Paris page. By being careful in the operation of working off, a thinner paper is employed, and altogether the quantity of reading matter in the Boston volumes is equal to three times that contained in a like bulk of the Paris volumes.

The number of public schools of various descriptions in Boston in January, 1830, was eighty, and the number of scholars in attendance 7430. Of these institutions nine were grammar-schools, nine writing-schools, one Latin and one English high school for boys, fifty-seven primary schools for children between four and seven years of age, two schools in the House of Industry, and one school de-

nominated 'the House of Reformation.' The expenses incurred for the support of these schools in 1829 was 65,500 dollars. The whole number of schools in the city, public and private, was 235, and the number of pupils in attendance 11,448. The whole expense for tuition, books, &c. was 196,829 dollars (41,000/). Harvard University, the best endowed institution of the kind in America, is at Cambridge, three miles N.N.W. of Boston.

The provident institution for savings in the city of Boston possessed on the 15th July, 1834, deposits from 11,516 depositors, amounting to 1,700,000 dollars (354,000/). There is a similar institution for receiving the savings of seamen, but no statement has been given respecting its financial condition.

The first Anglo-American newspaper, entitled 'The Boston News Letter,' was published in this city on the 24th of April, 1704; it continued to be published during seventy-four years, and for fifteen years of that period was the only newspaper printed in the English colonies in America. The second of these papers in point of time was likewise printed in Boston. The third Boston paper, first published in 1721, was printed by James the brother of Benjamin Franklin, in whose name the publication was for some time carried on, in consequence of some difficulties in which James Franklin was involved with the government. Some of the earliest writings of Franklin were given to the world in the columns of this paper, which was called 'The New England Courant.' The number of newspapers printed in Boston in 1834 was forty-two, of which nine were published daily, seven twice a week, and twenty-six weekly. The first daily paper was published in 1813.

Several periodical works are published in Boston. Among these may be mentioned, 'The North American Review' (Quarterly); Woodbridge's 'Annals of Education'; the 'Christian Examiner,' established in 1813, under the title of the 'Christian Disciple,' which was changed to its present title in 1824, published once in two months; and 'The American Almanac and Companion,' a valuable work conducted on the model of the British Almanac and Companion. The 'Edinburgh and Quarterly Reviews,' and some other English periodical works, are regularly reprinted in Boston.

The Massachusetts state prison is situated in Charlestown, adjoining Boston. Only male convicts are received into this building, which is conducted upon the same principle as that at Auburn. This prison was found by Mr. Crawford on his official visit in 1833 to be extremely well conducted. The attention which is paid to the moral and religious improvement of the convicts is highly creditable to the state. The discipline is strictly maintained, but its enforcement differs from the practice at Auburn in this respect, that 'flogging is never inflicted until the particulars of the case have been fully investigated by the warden or his deputy, and an opportunity has been afforded to the prisoner of being heard in his defence.' From statements given by Mr. Crawford, it appears that the profits derived from the labour of the convicts are sufficient to provide for all the expenses of the establishment, and to leave a balance of profits amounting to 7000 dollars in the year.

The number of convicts remaining in confinement on the 30th of September, 1833, was 250, whose ages were:—

From 15 to 20 years	.	.	19
" 20 " 30 "	.	.	103
" 30 " 40 "	.	.	76
" 40 " 50 "	.	.	38
" 50 " 60 "	.	.	9
" 60 " 70 "	.	.	2
" 70 " 80 "	.	.	1

250

The terms of imprisonment to which they were sentenced were:—

For six months	.	.	6
" one year	.	.	22
Between one and three years	.	.	90
" three and seven "	.	.	69
" seven and fourteen "	.	.	17
" fourteen and twenty "	.	.	4
For life	.	.	40

250

Exactly three-fifths of this number were convicted.

larceny, twenty-one had committed burglary, ten had been guilty of offences against the currency, thirty-six had been convicted of crimes against the person, and the remainder were confined for minor offences against property. The proportion of re-commitments to the whole number of convicts in the fifteen years from 1819 to 1833 was one to five; the proportion was somewhat less during the last than it had been during the first half of the period.

(*Life and Correspondence of Dr. Franklin*, 4to. edition; *Hinton's History and Topography of the United States*; *American Almanac and Companion*, 1830-1835; *Crawford's Report on the Penitentiary System of the United States*; *Tables of the Revenue, Population, Commerce, &c., of the United Kingdom*, part iii.)

BO'STRICHUS (Latreille), a genus of insects of the family Xylophagi. Generic characters:—body oblong, cylindrical, or nearly so; head rounded, capable of being retracted within the thorax as far as the eyes; eyes distinctly projecting; antennæ ten-jointed, short, the three terminal joints large and distinct, twice as broad as the remainder; the five following joints small and close together; the two remaining, or two basal joints, slightly thickened; palpi tolerably distinct, about equal in length to the mandibles, short, and three-jointed; thorax convex above, the anterior part humped; legs rather short, tarsi four-jointed, simple. The insects of this tribe are found on old trees, upon which their larvæ feed, and in so doing they generally construct their burrows under the bark.

Bostrichus capucinus (a rare species in this country) is about half an inch long; the head, antennæ, thorax, and legs are black; the rest of the body is red.

BOSWELL, JAMES, was born at Edinburgh, October 29, 1740. His father was Alexander Boswell, Esq., of Auchinleck (pronounced Affleck), in Ayrshire, who being in 1754 made a lord of session, assumed the title of Lord Auchinleck. His mother was Euphemia Erskine, great-grand-daughter of John, the twenty-third earl of Mar, who was lord high-treasurer of Scotland from 1615 to 1630. After having studied law at the universities of Edinburgh and Glasgow, Boswell visited London for the first time in 1760, and made many acquaintances both in the fashionable world and among the literary men of the day. In 1762 he made, as far as is known, his first essay in authorship by contributing some verses to a miscellany which appeared that year at Edinburgh, under the title of 'A Collection of Original Poems, by Scotch Gentlemen.' In 1763 he published a small volume of Letters which had passed between himself and the honourable Andrew Erskine (the brother of Thomas, the sixth earl of Kellie, the eminent musical performer and composer). This is a very characteristic volume, sufficiently prognosticating, by its style of frank exposure and good-natured self-complacency, the most remarkable qualities of the author's subsequent productions. With his father's consent he determined to make the tour of the continent before being called to the bar; and accordingly he set out early in 1763. While passing through London he was introduced to Dr. Johnson, on the 16th of May in that year, in the back shop of Mr. Thomas Davies, the bookseller, in Russell-street, Covent Garden. He proceeded in the first instance to Utrecht, where he spent the winter in attending the law classes at the university. After visiting various places in the Netherlands, he continued his route, in company with his friend the Earl Marischal, through Germany, Switzerland, and Italy. With his passion for making the acquaintance of remarkable persons, he had, while in the neighbourhood of Geneva, visited both Rousseau and Voltaire; and he now crossed over to Corsica, and introduced himself by means of a letter from Rousseau to General Paoli, then in the height of his celebrity as the leader of his countrymen in their resistance to the Genoese. Returning home by the way of Paris in 1766, he passed as advocate in July of that year. He soon after published a pamphlet, which was considered creditable to his abilities, entitled 'The Essence of the Douglas Cause,' being a defence of the claim of Mr. Archibald Douglas (afterwards Lord Douglas), to be considered as the nephew of the last Duke of Douglas, and as such to succeed to his property, against the counter-claim of the Hamilton family, who disputed his alleged birth. Although he thus signalized the commencement of his professional course, his business at the bar was from the first but a secondary object. He had come back from his travels so full of the Corsican chief, that he was speedily known by the nickname of Paoli Bos-

well. In 1769 he published at Glasgow 'An Account of Corsica, with Memoirs of General Paoli;' which was followed the next year by a duodecimo volume which he printed at London, under the title of 'British Essays in favour of the brave Corsicans, by several hands.'

In November, 1769, he married his cousin, Miss Margaret Montgomery of Lainshaw. About the same time his intimacy with his literary friends in London, and especially with Dr. Johnson, was drawn closer by another visit to the metropolis. In 1773 he accompanied Johnson on his journey to the Western Islands of Scotland. In 1774 he sent to the press another professional tract, being a 'Report of the Decision of the Court of Session upon the question of Literary Property, in the cause John Hinton, Bookseller, London, against Alexander Donaldson and others, Edinburgh.' It is a mere report of the judgments delivered by the Lords of Session in this cause, in which he had been engaged as counsel. In 1782, on his father's death, he succeeded to the family estate, and soon after removing to London entered himself at the English bar. In 1784 he published a pamphlet in support of the new ministry of Mr. Pitt, under the title of 'A Letter to the People of Scotland on the present State of the Nation.' His great friend Johnson died towards the end of this year; and in 1785 he published the first and not the least remarkable sample of his Johnsoniana, in a Journal of the Tour to the Hebrides. It appeared at Edinburgh in an octavo volume. The same year he published another 'Letter to the People of Scotland, respecting the alarming attempt to infringe the Articles of the Union, and introduce a most pernicious innovation, by diminishing the number of the Lords of Session.' Becoming now ambitious to make a figure in the political world, he made various unsuccessful attempts to obtain a seat in parliament. At the general election in 1790 he stood for the county of Ayr, but was defeated after an expensive contest. Before the close of the same year appeared in two volumes quarto the work which has preserved his name, and made it universally known, his 'Life of Johnson.' The sensation excited by this extraordinary production was very great; and if it be always an evidence of superior talent to do any thing whatever better than it has ever been done before, the work undoubtedly deserved all the immediate success it met with, and also the celebrity it has ever since enjoyed: for whatever may be thought of the character of either the intellectual or the moral qualities which its composition demanded, it cannot be disputed that the same qualities had never before been half so skilfully or felicitously exerted. Nor has any work of the same kind since appeared that can be compared with Boswell's. The best editions of this celebrated work are the two that have been lately published by Mr. Murray; the first in 5 vols. octavo, edited by Mr. Croker; the other in 10 vols. duodecimo. Both these editions contain Boswell's 'Journal of the Tour to the Hebrides,' and also many other pieces relating to Johnson never before incorporated with the present books. Boswell is said to have contributed a series of papers, entitled the Hypochondriac, to the first sixty-two numbers of the 'London Magazine' (from 1777 to 1782), which are said to be of very little merit; and a series of his Epistolary Correspondence and Conversations with many eminent Persons, according to Watt's 'Bibliotheca Britannica,' appeared at London in two volumes quarto in 1791, and again in three volumes octavo in 1793. He was preparing a second edition of his 'Life of Johnson' at the time of his death, May 19th, 1795. He left two sons and three daughters. (The fullest and best account we have met with of the life of James Boswell is given in Chambers's *Edinburgh Journal*, No. 199, for Nov. 21st, 1835.)

BOSWELLIA, a genus of balsamic plants belonging to the natural order Burseraceæ, and consisting of two species, one of which is believed by Colebrooke to be the *Libanos* of Theophrastus, and the *Thurea virgu* of the Romans. For the reasons upon which this opinion is founded see *Asiatic Researches*, vol. ix.

It appears that the gum resin called olibanum is the frankincense that was used by the antients in their religious ceremonies. Linnæus was of opinion that it was yielded by the Lycian juniper; but that plant is a native of the south of France as well as of the Levant, and the botanists of that country deny that any such substance is produced by their juniper. The Greeks obtained their frankincense from Arabia. The Arabians call olibanum both *Lubân* and *Cundur*; but as benzoin is most used at the

present day for religious purposes, the Mohammedan writers of India on materia medica apply only the term *Cundur* to olibanum. This *Cundur* has been ascertained by Messrs. Colebrooke, Hunter, and Roxburgh to be the subject of the present article.

Boswellia thurifera, as botanists call it, is a large timber-tree found in the mountainous parts of India, yielding a most fragrant resin from wounds made in the bark. Its leaves are pinnate, and consist of about ten pairs of hairy serrated oblong leaflets, each of which is from an inch to an inch and a half in length. The flowers are pale pink, small, and numerous. The calyx is five-lobed, the corolla of five downy petals, the disk a fleshy crenelled cup, and the stamens ten, alternately shorter. The fruit is a three-sided, three-valved, three-celled capsule, containing a single-winged pendulous seed in each cell.

From this Roxburgh distinguishes as a different species *Boswellia glabra*, a plant also yielding a resin which is used for incense and as pitch in some parts of India. It differs from the last in having no hairs on its leaves, in its leaflets being often toothless, and in its flowers being panicled.

BOSWELLIA THURIFERA. (Colebrooke, *Asiat. Researches*, ix. p. 377; Roxb. *Fl. Ind.* ii. p. 383.) It is necessary to be precise in referring to the authorities where this plant is described, as it is very uncertain whether it be the same as the *B. serrata* of Stackh. extr. Bruce (p. 19. t. 3), which is generally regarded as a synonyme of this plant. For the reasons for distinguishing them, see Wight and Arnott's *Prodomus Florae Penins. Ind. Orient.*, vol. i. p. 174. A native of the mountainous parts of India (see above) yields the gum-resin (improperly termed gum) olibanum, the frankincense or thus of the ancients. This substance was long supposed to be obtained from various species of *Juniperus* of the family of the *Coniferae*, such as *J. phoenicea*, Linn., *J. lycia*, Linn., *J. tetragona*, Mönch, the *J. thurifera*, Linn., or *J. hispanica*, Lam., and even from the *J. oxycedrus*, Linn. Some persons are still of opinion that the Arabian olibanum is derived from a juniperus; which, independent of our positive knowledge of the source of the Indian olibanum, is very improbable, for as Nees von Esembeck justly remarks, the conifers yield only pure resins, or resins consisting of resin, volatile oil, and sub-resins, but in no case any gum-resins. Indeed, if the Arabian olibanum be not obtained from a *Boswellia*, it is most probably yielded by a *Balsamodendron*: (Kafal? Försk. possibly only a variety of *B. Kafal*. Försk.) at least the wood of this tree is used to burn as a perfume in the mosques.

A substance analogous to olibanum, and used in a similar way in various parts of the world, is procured from several different trees, such as, in America, the *Croton nitens* (Schwartz), *C. thurifer* (Kunth), *C. adspatus* (Kunth): in Columbia, *Baillieria nerifolia* (Kunth), yields the American frankincense; also the *Amyris* (*Icica Tacamahaca*, Kunth) *ambrosiaca*, (Linn.) yields the resin coumier, likewise called American frankincense.

Lætia apetala (Jacq.) also yields a substance similar to frankincense.

Olibanum occurs in commerce of two kinds, the Arabian and East Indian: the former kind is now seldom met with, and its origin is a subject of doubt; the latter is obtained from the tree above described, and to it we limit our remarks. There are two varieties or degrees of fineness of it, the best called *olibanum electrum*, or *in grants*, sometimes called *Thus manna* or *Thus masculum*; the other is termed *olibanum commune*, or *in sortis*, also *foemineum*. The first occurs in pieces varying from the size of a hazel-nut to that of a walnut, or larger, which are roundish or irregular in shape, of a light yellowish colour, varying to red or brown in some pieces, opaque or semi-transparent, the outside often covered with a white powder, and upon being pounded the whole becomes a white powder. It is very friable, and breaks with a dull, sometimes even, sometimes splintery fracture.

The second sort is generally in larger pieces, mostly of a dirty-grey or fawn colour, and intermingled with pieces of wood and other impurities.

The odour of olibanum is faint and peculiar, but pleasantly balsamic, which is increased by heat, and when inflamed it burns with a steady clear light, which is not easily extinguished, diffusing a most fragrant smoke. It leaves behind it a black ash. The taste is balsamic, slightly acid

and bitter. Being a gum-resin, it is not perfectly soluble either in water or alcohol; with the former it forms a milky fluid. It consists of gum-resin and volatile oil: the latter principle has the odour of oil of lemon. The Indian olibanum is not often adulterated, but an inferior or the Arabian kind is often substituted. The latter is frequently intermixed with mastic, gum-sandarac, or Burgundy pitch; when there is much of this last article, it may be discovered by the greater solubility in alcohol.

Olibanum is now seldom used in medicine: it possesses the properties common to balsamic substances, and may be used in the absence of inflammatory symptoms, or after appropriate antiphlogistic treatment, be used as an expectorant. It is more useful externally as a rubefacient and antispasmodic, especially applied as a plaster over the stomach in some cases of cramp or spasm of that organ. It is however principally employed to burn as incense in Catholic churches.

BOSWORTH (commonly called **MARKET BOSWORTH**, to distinguish it from another place of the same name in the hundred of Gastre), a par. and m. t. in the hund. of Sparkenhoe, co. of Leicester, 95 m. N.W. by N. from London, and 12 m. W. from Leicester. It is called Bosworde in the 'Domesday Survey,' which mentions the demesne as containing a wood one league long and half a league broad, and names a priest and deacon among the occupants. After mentioning Bosworde and some other demesnes, it concludes rather curiously with—'all these lands Saxi held, and might go whithersoever he pleased.' This Saxi lived before the Conquest, it would seem, as one Hugo de Grentesmainell and the Earl of Mellent are named as the existing proprietors.

The small town of Bosworth is pleasantly situated upon an eminence, in the centre of a very fertile district, and contains several good houses. It has no manufacture of any consequence, except that of worsted stockings, which affords occupation to many persons here and in the neighbourhood. The Ashby canal, which passes within a mile of the town, has given facilities for the obtaining of coal and other commodities. There are now two regular fairs for cattle held at Bosworth, on the 8th of May and 10th of July every year. The parish contained fifty-four houses in 1801, when the pop. was 2530, of whom 1806 were females.

There is a free grammar-school at Bosworth, founded by Sir Wolstan Dixie, lord mayor of London in the reign of Elizabeth. He built in his lifetime the plain but neat school-house, which has within these few years been taken down and rebuilt in a more commodious form. The endowment produced, some years since, upwards of £200 per annum. Sir Wolstan also founded two fellowships and four scholarships at Emmanuel College, Cambridge, for the benefit of persons either related to the Dixie family, or educated at the school. Owing to the charity being managed by the founder's representatives, a suit in Chancery was instituted, which continued above twenty-five years, and the operation of the charity was suspended; but the proceeds of the estates, being paid into Chancery, accumulated in that time to a very large sum, the judicious appropriation of which may render the Dixie free-school a most important establishment. Simpson, the eminent self-taught mathematician (a native of the town), was usher of the school; and also Dr. Johnson, when a young man.

The decisive battle between Richard III. and the Earl of Richmond, when the death of the former, after a bloody struggle of two hours' duration, terminated the long struggle between the houses of York and Lancaster, was fought on August 22, 1485, on a plain, commencing about one mile south of the town. This fine and spacious plain, which is nearly surrounded by hills, was formerly called Redditch Plain, from the colour of the soil; but since the battle it has been called Bosworth Field, from the name of the nearest town.

The plain is rather of an oval form, about two miles in length and one in breadth. At the time of the battle it was one piece of uncultivated land, without hedge or timber, but is now so altered by both, that nothing of its former appearance remains except the general form of the ground. The spot where Lord Stanley placed the battle-crown upon the head of Richmond, and hailed him king, is now known under the name of Crown Hill. There is also a well which was called King Richard's Well, upon the notion that the monarch quenched his thirst during the battle. Dr. Parr, who visited the spot in 1763, found that it had been drained and closed up since he was

there six or seven years previously; his representations procured a subscription for the purpose of raising a suitable monument on the spot, for which he furnished an appropriate Latin inscription.

Numerous relics of the battle have at different times been turned up in digging and ploughing the soil,—such as shields, crossbows, arrow-heads, halberds, pieces of armour, rings, spurs, and sometimes human bones and skeletons.

(Nichols's *History of Leicestershire*; Carlisle's *Endowed Schools*; Hutton's *Battle of Bosworth Field*; *Gentleman's Magazine*, 1813; &c.)

BOSZOERMENY, or **BOESZOERMENY**, a Haiduck town in the Hungarian co. of Szabolts, not far N.W. from the town of Debreczyn. It has a civil tribunal, a Protestant and a Græco-Catholic church; the inhab. subsist principally on the produce of their herds: it possesses a pop. of about 13,000; and is the seat of the captaincy of the Haiduck districts, 47° 39' N. lat., 21° 30' E. long. We may here remark that these districts consist of level tracts of country, on which a few corps of Hungarians, Servians, and Wallachians, raised by John Corvinus, vice-lieutenant of Hungary, received permission to settle from Stephen Botskay, prince of Transylvania; to whom they had rendered very important services in the field. The present possessors of the Haiduck districts are their descendants, and enjoy the privileges secured to them by the constitution which was granted them on their first settlement in the time of Matthias I. king of Hungary. They were placed under the control of a captain-general, and the subsequent kings of Hungary (latterly emperors of Germany or Austria) have continued their privileges to them. The whole extent of the Haiduck districts, which is divided into three distinct portions, chiefly in the co. of Szabolts, and partly in that of Bihar, amounts to about 372 sq. m. The people speak the Hungarian tongue, and five-sixths of them are Calvinists; the remainder are Roman Catholics. In 1784 their numbers were 28,736; in 1831 they appear to have declined to 27,732.

BOTANICAL GARDENS. [GARDENS.]

BOTANY is that branch of science which comprehends all that relates to the vegetable kingdom. The term Botany is derived from the Greek, in which *bótane* (*βοτάνη*) signifies any kind of grass or herb, and *botánikē* (*βοτανική*) the art which teaches the nature of plants and herbs. The structure of plants, their mode of growth, their habits of life, their mutual relations, their uses to man, or the danger that results from their employment, the station they occupy in the scale of the creation; and many other similar considerations, form each an extensive field of inquiry which botany combines into one connected whole. This statement will serve to show how imperfect a view of the subject is taken by those who imagine that the art of naming and classifying plants is the great end of the science, and not one of the most humble of its means, unless it is conducted upon great general views and sound philosophical principles.

In an article of this kind it would be impossible to enter very minutely into any of these subjects, or indeed at all into many of them; we shall therefore confine ourselves to, 1. *A general view of the nature of plants*: 2. *The history of the steps by which botany has advanced from its rudest state to its present condition as a science*: and 3. *The practical purposes to which it is capable of being applied*; to which will be appended a *glossary* of the botanical terms most frequently in use.

I. To our ordinary apprehension a plant is an organized body, attached to the surface of the earth by roots, which at once keep it stationary and feed it; incapable of motion except from the agency of external influences, destitute of perceptibility, living by aid of its leaves, and multiplying by the power of its flowers, fruit, and seeds.

To enable it to execute the functions of nutrition, its leaves possess the property of decomposing and assimilating the fluid or gaseous matters which are obtained by the roots from the soil and conveyed into the leaves through the stem: these parts are also capable of returning the elaborated matter back into the stem, or to those organs in which its presence is most required. To bring about the phenomena of reproduction, the leaves are modified in form and nature, and become successively a calyx, which protects the interior of the flower, and a corolla which gives it beauty; stamens, whose points are filled with a fertilizing powder, and a pistil which is furnished with the means of imbibing the fertilizing influence and conveying it to the young seeds enclosed within

its cavity. The latter are fed by the nutritive matter elaborated by the genuine leaves until they are full grown; they are in the mean while guarded from external injury by the fruit which grows with their growth, and at last contain a miniature representation of their parent enveloped in many folds of tough protecting matter, and capable of reproducing a being exactly like that by which it was itself produced, whenever it is committed to the soil from which it is in its turn to obtain its food.

In a more general point of view, a plant is to be considered as a mass of closed, transparent, elastic, irritable bags, called tissue, formed of an excessively delicate membrane, and combined into various organs, by means of which the functions of its life are carried on. This tissue occurs in several different forms, all of which are reducible to the cellular, the fibrous, and the vascular. Of these, the most important is the cellular. This kind of tissue consists of little bladders or vesicles, which, if developed in a medium in which they experience no resistance, would be of a spheroidal figure, but which lose that form by being exposed to various degrees of compression, in consequence of which they are found in a state varying from the form of a rhomboidal dodecahedron to that of extremely elongated parallelograms. Such tissue as this constitutes the basis of all vegetables, generally by far the largest part of them, and often their entire structure. The two other forms are of secondary importance, are generated subsequently, and are probably mere modifications of it. It appears to be indispensable to the propagation of species, forming the fertilizing matter in flowering plants, and being that by means of which the species of flowerless plants are exclusively propagated.

Fibrous tissue consists of tubes of variable length packed closely side by side.

Vascular tissue has the appearance of transparent threads twisted spirally like a bell-wire within a membrane, and either readily unrolling in consequence of the want of cohesion of the contiguous spires and then contracting when the force that was required to unroll them is removed, or not capable of unrolling, in consequence of the cohesion of the spires, and assuming the appearance of a tube streaked crosswise with fine lines; or else, in consequence of an interruption of the continuity of the cohering spires, that of a cylinder covered with broken bars or interrupted fissures.

It may possibly be supposed that these elementary organs are readily recognized upon a mere casual inspection, that they bear some considerable proportion in size to the plants themselves to which they belong, and that nothing more is necessary than to pull a portion of any vegetable matter in pieces to discover those bladders, fibres, and spirally twisted vessels. So far however is this from being the case, that an observer would certainly recognize nothing of what has been mentioned, by inspection with the naked eye, except perhaps in the pith of a few plants, such as the elder for instance, in which it is possible to distinguish the cells of cellular tissue. The fact is, that countless multitudes of individual cells, or vessels, or fibres, are required to form but a very small portion of vegetable matter. So exceedingly minute are they, that it has been calculated that above 10,000,000 vesicles of cellular tissue are contained in a fungus called *Reticularia maxima*, three or four inches broad, and something less than half an inch thick. A single thread of hemp, which is not thicker than a human hair, is composed of a considerable number of tubes of woody tissue glued together; and the stalk of a strawberry leaf conceals hundreds of spiral vessels in its centre. From such materials, thus infinitely minute, and as we must suppose infinitely weak in each individual case, though of surprising strength and force in a state of aggregation, is the whole vegetable world constituted, and by their agency are all the delicate actions of vegetable life maintained in a state of ceaseless activity.

For the adequate performance of such functions tissue has certain special powers; the most remarkable of which are *cohesion* and *permeability* to fluid or gaseous matter. It would be difficult to conceive how vesicles, or fibrous or spiral threads, could be combined into bodies of regular and uniform figure, unless the property of mutual cohesion were to exist. We know in fact that this power is universal in the vegetable kingdom, and that all contiguous surfaces in plants either uniformly do, or frequently will cohere, and so firmly that no traces of the union can subsequently

be discovered. Thus, cellule adheres to cellule; a dodecaedron has another cellule firmly united to each of its twelve plane faces, a parallelogram is surrounded by six, and so on; and cylinders cohere side by side where their surfaces touch each other. In like manner as cellule grows to cellule and fibre to fibre, so do contiguous masses of such tissue form a vital union; leaves will grow to leaves, and stems to stems, approximated bracts cohere into involucre, the margins of petals grow together and form monopetalous corollas; nay, even the stamens and pistils contract adhesions of various kinds, not only with their own parts, but with one another, thus arriving at a most complete state of hermaphroditism; and finally, one plant may be made so to grow to another, that in a short time no traces of the union are left, and to our senses a complete amalgamation of their respective individuality is effected. Allusion is not here made to the natural union of one species with another which takes place between parasites, properly so called, and the tree that bears them; but rather to the artificial combinations which man has from very distant ages had the power of making for his profit or his pleasure. Thus we take a branch of one plant and apply its tissue to that of another even of a different species; a strict adhesion speedily takes place, and a new individual is the result, consisting of two species firmly united to each other, each possessing its own particular system, exercising its own peculiar functions, and only to be separated in death. Upon this property depend the gardening operations of grafting, budding, inarching, and so forth.

In the next place, tissue has the power of transmitting fluids in all directions through its membrane. This membrane has been already described as transparent, nearly as much so as glass or talc; it is also perfectly continuous, without the slightest trace of perforation or pore. It has been supposed, indeed, to be furnished with pores visible under the microscope, but all observers are now agreed that this is not the fact. It is however undoubtedly permeable, not only to gases or the more subtle fluids, but also to water and substances held in solution by it, which pass through the membrane with the greatest facility. Hence, notwithstanding the want of distinct orifices by which nutrition can be received by plants, and superfluous matter expelled, the processes of absorption and perspiration are as constantly and regularly in action as in the animal world. How perfect must be that permeability, and how efficient the means for the transmission of the fluids, by which plants are nourished, may be easily collected from this fact, that the tiny leaves of the gigantic pine-trees of North-west America must some of them be fed from a distance of 250 feet, through all the sinuosities and obstructions of tortuous branches, and still more tortuous roots: in such a case as this the nourishing system of a single leaf would be at least 5000 times greater than the leaf itself.

We are accustomed to regard a plant as an individual consisting of a central part, called a root and stem, round which various organs known by the name of scales, leaves, bracts, flowers, and finally fruit, are arranged in a certain order; and to consider an individual plant as of a nature analogous to that of an individual animal, having a term of time within which the duration of its life is fixed. Thus there are plants that are born and die in a day, such as the race of mucors: and there are animals whose existence is perhaps not much longer, such as infusoria; other plants are animated for a few months, increase their species, and die, like many insects—while the remainder of the vegetable world having, like the higher orders of animals, no fixed limits of existence, perish only by accident or disease. Undoubtedly, in one sense, a plant is to be considered as an individual, but not in the sense to which we have adverted. In an individual animal the loss of any limb is *pro tanto* destructive of its functions: the removal of a leg for instance renders it less capable of walking, of an eye of seeing, of a hand of holding, and so on, while the removal of some organs, as the head or the heart, is instantly destructive of life altogether, and the individual perishes. And again, the individual animal has but one apparatus for propagating its species, which, once removed or injured, can never be replaced. Not so plants. From an individual plant limb after limb may be lopped away without detriment; its head, its roots, may be mutilated, or even removed, and yet its vitality *remain unimpaired*; its very heart (*i. e.* heart-wood) may be scooped out or rot away by dis-

ease, and yet its life and all its functions go on as before. If deprived of the power of procreation in one part, an hundred other sets of apparatus are ready to supply the deficiency. If plants were to perish as readily as animals, the world would soon be a barren waste,—so exposed are they to accidents, and so constantly destroyed for the purposes of man: rooted to the soil, without the power of evasion, or of defence, injuries such as are fatal to animals are of constant occurrence with them. Their organs of reproduction are either in the form of flowers or of fruit, the most attractive or most useful parts that they possess, and are continually torn from them to administer to the pleasures or necessities of animals. Undoubtedly such an explanation of the cause of the difference between animals and plants is both pleasing and true. But the philosopher cannot pause thus at the threshold of his inquiry; he must also seek to explain the exact nature of the difference between animal and vegetable vitality, and to discover how it happens that the individuality of the two kingdoms is so essentially different.

The first person who ventured fairly to approach this subject was Dr. Darwin, who about forty years ago published his opinion, that plants were a lower order of animals analogous to corals, and endeavoured to prove the truth of his theory, by demonstrating a direct analogy between plants and animals in every organ of nutrition or reproduction. His views have been little attended to in this country, which may be easily accounted for by the facts on which he relied, being so much mixed up with fanciful and inaccurate matter, that discredit was cast upon his whole theory. And yet it cannot now be doubted that the analogy that he laboured to demonstrate between plants and animals is every day becoming more and more certain, even to the point of a distinct circulation of blood in the vegetable kingdom: but that what we are justified in calling the most original and most important part of his theory was strictly true, we shall proceed to explain.

If we look a little closely into the structure of a tree, we shall find that it is composed throughout of tissue arranged in the same order, exactly, in every part: for instance, if at the bottom of the stem there is cellular tissue in the centre, and fibrous and vascular tissue arranged in a particular manner round it, exactly the same tissue arranged in the very same manner will exist in every division of the stem. So that except in diameter there is no essential difference between the trunk of an oak, for example, and its most slender twig. Again, with regard to the manner in which the stem, or the branches, or the twigs are surrounded with leaves, and flowers, and fruit, it will be found upon accurate observation, that whatever may be their disposition, or proportion, or nature in the first shoot that a germinating seed shall have made, the same will be the disposition, proportion, and nature of the shoots in all succeeding branches, so that if a tree consists of a million twigs, it will consist of a certain arrangement of external and internal organs, a million times uniformly repeated. It will be further remarked that the original twig, produced upon germination, sprang from a vital point, or bud, never varying in position, that existed in the seed; that the second race of twigs or shoots was generated from new vital points or buds formed in the first shoot, and invariably in the same position with relation to the leaves of that shoot as the first or seminal vital point bore to the seed leaves; that the third generation originated from the second exactly as the second from the first, and so on. A fourth observation would to an attentive observer be connected with these. It would be seen that as the development of the seed took place in two opposite directions, the one upward, the other downward, so in like manner did the buds develop; that while the seed sent a stem upwards to bear leaves and to generate vital points, and a root downwards, to support them, so does each bud send upwards leaves and other buds, and downwards roots: the latter however creeping under the bark, while those of the seed creep beneath the soil.

Such observations as these cannot fail to lead to this conclusion, that the cause of plants bearing the most extensive mutilations with impunity, in which they so especially differ from animals, is, that they are not simple, but compound individuals, with as many distinct seats of vitality as they contain buds; and that consequently when branches are lopped off, or flowers and fruit gathered, we only separate from a large mass of individuals a small portion of the community, the absence of which is no more missed by,

productive of no greater inconvenience to those that remain, than the swarming of bees is to their parent hive.

It is obvious therefore that they in reality bear a close analogy to corals and polypes; and this leads us to the inquiry as to how plants differ from the animal kingdom.

If animals consisted only of quadrupeds, and birds, and fishes, and vegetables were confined to trees and herbs, no conceivable difficulty of assigning to each kingdom the most positive limits could be experienced. For every person sees how wide a difference exists between the larger animals and the more conspicuous plants: the less indeed we are acquainted with the subject, the more easy is the task of distinguishing them; but to those who are acquainted with the infinite varieties of form, structure, and nature, which are included within these kingdoms, the limits which divide them will be found to present one of the most difficult problems in the philosophy of natural history.

As an ingenious French physiologist has well remarked, it is not a question about what are the characters peculiar to animals, but what are common to them all. We know very well that they only have brain, nerves, muscles, a heart, lungs, a stomach, and a skeleton; that they move, digest, respire; that they have blood, and appear to have sensation; but what remains of all these characters when we descend the long chain that they form, from the first link to the last. Almost nothing. Lungs, glands, brain, skeleton, heart, arteries, blood, nerves, and muscles, successively disappear, till at last we are not sure whether we have even a stomach left. (*Ibid. Bourdon, Phys. compar. p. 10.*)

If a comparison is instituted between the highest form of development in either kingdom, between a human being and a tree, the differences are too striking to escape the most ordinary observation. We see that animals are endowed with sensation or perception; that they possess locomotivity, or the power of transporting themselves from place to place; that they live upon organic substances which their powers of locomotion and perception enable them to select; that their food passes through an alimentary cavity, from which its nutritive properties are transfused by means of absorbent vessels into the system. Plants, on the contrary, are destitute of all traces of a nervous system and consequently of perception; they are fixed to a particular spot whence nothing but mechanical power can remove them; they are incapable of all motion, except from some internal mechanical agency; they subsist upon such inorganic matter as surrounds them, and their food is at once introduced into their system by absorption through their external surface only.

Vegetables are also said to be compound beings, animals simple beings. For illustration, whatever objections may be taken to such a comparison, the latter may be considered, with Link and Blumenbach, to have only one seat of life, the sensorium commune, and to have but one provision made by nature for their propagation; the former, which are capable of reproduction by various means from various points of their body, must have the seats of vitality as numerous as the parts which are thus capable of self-perpetuation. Hence articulations, buds either latent or developed, and seeds, are in plants so many distinct seats of vegetable life. While all-powerful man has but one feeble means granted him of perpetuating his race, millions of millions of individuals, which in a physiological sense are identically the same, have been produced by the half-dozen potatoes brought to Europe by Raleigh, in 1584, and this without any aid from the ordinary means which nature has given plants for their multiplication.

Among the distinctions between the animal and vegetable kingdom, that which demands the first consideration is the different means possessed by animals and vegetables of procuring food and of imbibing nourishment. Animals have the power of moving from place to place, and are gifted with perception, which enables them to distinguish what is proper for their sustenance. They are also furnished with organs of mastication, which enable them to reduce to minute pieces very hard substances. As their food is only procured by an act of exertion on the part of the animal, and as this exertion is not continual and uninterrupted, but only takes place at intervals of time, they are also provided with an internal reservoir in which the food that is so procured is deposited; from this reservoir, called the stomach, the absorbent vessels conduct the elaborable parts into the system, while the solid useless parts are rejected: animals therefore are nourished by internal absorption. Vegetables which are

continually rooted to the same spot, which have no power of roaming from place to place in search of aliment, which have no capability of distinguishing between the useful and the hurtful, the wholesome and the poisonous, but which are compelled to derive their support from such matter as chance may place immediately and continually in contact with them, and which therefore experience no cessation to the supply of food, are not provided by nature with organs of mastication. The want of these organs renders a stomach unnecessary; internal absorption or intussusception of nutriment cannot take place; and we accordingly find that their existence is sustained not by an uncertain periodical introduction of food into an internal cavity, but by the perpetual absorption of food from the matter perpetually about them, through pores of their surface too fine for human perception. Nothing therefore which requires to be divided by mechanical force, nothing which needs to be altered in its texture or substance before it can be used, or to be digested, nothing which has to be sought for, nothing in short but matter which is so delicate as to pass through perforations, which the human senses, aided by the most powerful microscopes cannot distinguish, is fitted for the support of plants; and no inorganic matter exists which answers to this description, but water or air, or substances held in solution by these two elements, and such in fact are the materials by which vegetables are supported.

As in animals, nourishment is derived from their centre, so it follows that all their absorbent vessels have a direction towards that centre; and for the same reason, as in plants, nutrition is communicated from the outside, so is it in that direction that all the absorbent vessels of the vegetable are directed. The consequence of these two laws is, that while a term is prescribed to the growth of the most perfect animals, no limit seems to be fixed for that of the most perfect vegetables. The former perish as soon as their original vessels become incapable of performing their functions; the latter endure until the power of forming new vessels shall cease. The period to the former is fixed, to the latter unlimited. Hence an eloquent French writer has ingeniously said, that animals die of old age or accidents, vegetables of accidents alone. Hence also the incredible age to which certain trees arrive. The cedars of Mount Lebanon are said to be of an antiquity far beyond all history; and it has been calculated by a French botanist, from actual inspection, that the age of the baobab trees of Senegal must have exceeded 6000 years. These are the most decided differences between animal and vegetable life, and are almost without exception. Some plants, indeed, having only an annual or biennial existence, have a term fixed to their lives, just as animals have, but no plants can be pointed out in which nourishment does not take place from the outside. When we descend in the scale of being, when we arrive at those limits of the world where life first arises out of death, in which sensation is indistinguishable, and from which the two kingdoms seem to diverge as from a common point, even there we find the polypes, which are so simple in their structure that they may be turned inside out like a glove, always conforming to this law. Zoologists assure us that they still absorb from the inside even when that part of the body which was once the outside has to perform the duties of a stomach.

But with this exception we know of no absolute external distinction which has yet been discovered between animals and vegetables. The ingenious idea of Mirbel, that animals live upon organic, vegetables upon inorganic matter, must, as respects the infusorial animalcula, be a purely hypothetical difference, and in more perfect animals is not true, as has been shown by Mr. William MacLeay, who asserts that 'many animals of the lower tribes, and some Heteromorous Coleoptera, have been observed to feed upon inorganic matter.' (*Hora Entomologicae*, ii. 193.)

If we now reconsider the observations which have just been made, and endeavour to see to what the distinction of animals and vegetables is really reducible, we shall find that it consists in animals being organic beings, possessed of sensation and locomotion, and sustained by the absorption of nutriment through an internal canal, while plants have no sensation or locomotion, and are nourished by absorption through their cuticle. But how are we to apply these distinctions to the lower orders of created beings? Among these we find productions, which it is impossible, by the characters now assigned, to refer with any exactness either

to the one kingdom or the other. A drop of water and a little brown or green slime from a ditch will often afford abundant evidence of the accuracy of this remark.

If we place a drop of water and a few fragments of confervæ under a microscope, we shall probably discover an abundance of little bodies shaped like a weaver's shuttle, transparent at the extremities and in the middle, with two or four semi-opaque brownish cavities in their inside: these bodies have a sort of starting motion, very distinct and continued, but they do not seem capable of turning on either axis; nor is any motion of contraction visible; they vary in length, according to De Blainville (*Dict. des Sc. Nat.* 34, 367), from the five-hundredth to the hundredth of a line, and when full grown exceed these dimensions considerably. By Müller, a standard writer upon infusorial animalcules, they are considered animals, and referred to his genus *Vibrio*, part of which consists of bodies of an undoubted animal nature. By modern observers they have been named *Navicula*. When young they are attached to confervæ by a stalk so delicate as to be almost invisible with the aid of the most perfect microscopes, and during this period they have, according to M. Bory de St. Vincent, no visible motion whatever; but when the *Navicula* is fully formed it separates from the plant on which it grew, swimming and starting about in the water in the way described. Are such productions animal or vegetable? When young they are motionless and vegetable like a minute plant; when full grown they acquire the movement of animals. Perhaps one may say they are the latter, and compare their vegetating state when young to that of the *Polype*, called *Vorticella*, an undoubted animal, if rapid and varied motion can make it so.

Among confervæ in ditches are often found little fragments of organized bodies; some like ribbands, separable completely into numberless narrow transverse portions, others dividing partially at their articulations, but adhering at their angles like chains of square transparent cases. These enter the genera called by naturalists *Diatoma*, *Fragilaria*, *Exilaria*, *Achnanthes*. Are they animals or plants? When combined they are motionless, with all the appearance of confervæ, their transparent joints filled with the green reproductive matter of such plants; but when they disarticulate, their separate portions have a distinct sliding or starting motion. Shall we call them, with M. Gaillon, chains of animals assembled in a voluntary captivity which no one has seen them assume; or shall we not be rather justified in viewing them as links between the animal and vegetable kingdoms, and endowed with the characters of both.

Conferva mutabilis, or *Draparnaldia*, is a plant-like body, which, according to Messrs. Mertens and Gaillon, is sometimes an animal, sometimes a plant. The former says that he has frequently seen it undergo its transformation, particularly in August, 1822. On the 3rd of that month he showed it to a great number of persons in a state of plant; on the 5th it had disarticulated into portions distinctly moving in water, which on the 6th began again to unite, and on the 10th became finally combined into their primitive state of conferva. (*Dict. des Sc. Nat.*, 34, 373.)

It perhaps may be said that the instances yet given are not at variance with the distinction of animals and vegetables by their power of motion; and that as they are all inert when in their most perfect state, their giving birth to moving bodies does not make them animals any more than the production of motionless eggs by birds, reptiles, and mollusca makes them vegetables.

In which kingdom then are we to station the curious *Polypysa*, a most undoubted polyp, according to Lamouroux, Leman, and De Blainville; an equally certain plant if we are to believe Turner, Agardh, and Gaudichaud, the last of whom found it living, and describes it thus. It grows in thick tufts to the shells which are thrown ashore upon the barren coast of Shark's Bay in New Holland. Each individual consists of a fistular, capillary, greenish stalk, about an inch or an inch and a half long, expanding at the base into a sort of root-like claw, by which it is fixed. At the end it bears from fifteen to eighteen sacs, which are entire, rounded at the end, and slightly attenuated to the base; each contains a multitude of little round green globules, which finally expand and break through the thin case in which they are included. They are filled with a green unctuous matter, and the colour of the parent body is entirely due to their presence, for when they have all escaped from their sacs, the mother body is perfectly colourless.

To which kingdom are we to refer the beautiful *Salmacis* and all the tribe by some botanists called *Conferva conjugata*, or *Zygnemas*, which Messrs. Gaillon and De Blainville assert to be of animal nature, but which green-like vegetables, from which they are undistinguishable by external characters. They are transparent tubes, having distinct articulations and transverse partitions, the cavities being filled with brilliant green spherules arranged with the most beautiful symmetry in one or more spires, which, separating at a certain period of their existence, and passing through the sides of the tube, develop in the form of new tubes exactly like their parent. When in a perfect state the contiguous tubes or filaments unite in a manner completely animal in appearance, uniting at one period, separating at another, and finally combining themselves into a single and uniform being.

Lastly, where are we to place the oscillating confervæ, those slime-like masses which cover the earth in damp and shady places, or form mucous patches among the confervæ and polytes of stagnant water, or appear under the form of a rich carmine stain, bordered with resplendent violet and blue, on the surface of hot springs, in all parts of the world; productions which, according to the speculations of an ingenious Swedish naturalist, have once possessed an animal life, of which they now only retain the appearance. These oscillatorias consist of articulated tubes filled with green granules, and grow and increase like confervæ, and the reproductive particles to which they give birth have no motion that is apparent. But the tubes themselves have a writhing, twisting, undulating, creeping, distinctly animal motion, which it is impossible to mistake; they are more active in warm than in cold weather, and in the latter can be excited to action by the application of warmth. When chemically examined, they have been found to exhibit many of the characters peculiar to the animal kingdom; and when burnt, yield a carbon of the most fetid odour, exactly resembling that of decaying animal substances.

Such are a few of the difficulties which that naturalist has to overcome who would fix the limits between the animal and vegetable kingdoms. It is clear that the power of voluntary motion exists in beings having a distinctly vegetable structure, both in the most perfect state and in a state of disintegration; that the absorption of nutriment from the inside in the one family, and from the outside in the other, is a character not appreciable in such creatures as the monads, and the vivifying animalcules of flowering plants; and, finally, that chemical differences are destroyed by acrobata and oscillatorias. In this difficulty shall we admit with M. Bory de St. Vincent, a new kingdom intermediate between animals and plants, characterized as consisting of insensible individuals, that develop and increase in the manner of vegetables, up to the period when they separate into animated germs or reproductive fragments; or shall we rather consider the absence of all exact limits between animal and vegetable nature as a striking proof of the beautiful harmony of nature, and of that unity of purpose which is so visible in all the works of the Creator; as an evidence that all the forms of life are but assemblages in insensible gradation of the same living matter differently combined by the great Spirit that pervades all matter and all space?

II. In treating of the history of this science, we have no intention of entering upon details which can only interest the systematical botanist, or of criticising every step which its followers may have taken; but, on the contrary, we shall confine ourselves to a mere sketch of the progress that has been made in elucidating the great principles by which its rank as a branch of philosophy is to be determined.

It is obvious from various passages in the most ancient writers, that the art of distinguishing certain plants having medical virtues was taught at the earliest period of which we have any written record; and that the cultivation of something more than corn was already understood in the Homeric days is sufficiently attested by the references to the vineyards of Laërtes and the gardens of Alcinoüs, and by the employment assigned to Lycaon, the son of Priam, of pruning figs in his father's garden.

The earliest tangible evidence that we possess of the real state of knowledge upon this subject is afforded by the remains of the writings of Aristotle and his school. From the absurd superstitions of the root-cutters (*rhizotomoi*) of that period it might be imagined that at this time botany was far from having any real existence; for it is to them that we

have to trace the belief in the necessity of magical ceremonies and personal purification or preparation in collecting herbs; some sorts, they tell us, are to be cut against the wind, others after the body of the rhizotomist has been well oiled, some at night, some by day. Alliaceous food was a necessary preparation for procuring this herb, a draught of wine for that, and so on. But in fact at this very time the Peripatetic philosophers were in possession of a considerable mass of correct information concerning the nature of vegetable life, mixed up indeed with much that was fanciful and hypothetical, but calculated to give us a high opinion of their acuteness and of the amount of positive knowledge upon such subjects which had by that time been collected. It is by this school that botany must be considered to have been first formed into a science. Aristotle, in all probability, was its founder; for it is obvious from the remarks upon plants scattered through his books concerning animals, that his knowledge of vegetable physiology was, for his day, of a most remarkable kind. But as the books immediately concerning plants ascribed to this philosopher are undoubted forgeries, it will be more convenient to take the works of Theophrastus as our principal guide to a determination of the state of botany at the commencement of this—

The First Era.—At the time when Theophrastus succeeded to the chair of Aristotle (a.c. 324) no idea seems to have existed of classification, nor indeed was its necessity by any means apparent, for Theophrastus does not appear to have been acquainted with above 355 plants in all. In the application of their names, even to these, there was so much uncertainty that the labours of commentators must be to a great extent bestowed in vain in endeavouring to elucidate them: for instance, Sprengel asserts that the name *Aphake* is applied indifferently to the dandelion and to a kind of vetch (*Lathyrus aphaca*), and *Scorpius* to a species of broom, to *Arnica scorpioides*, and to a kind of ranunculus. But while Theophrastus was thus careless in his denominations of species, he has the great credit of having attended accurately to differences in the organs of plants, to some of which he gave new and special names; the form of leaves, their margin, the manner of their indentation, and the nature of the leafstalk, especially attracted his attention. He distinguished naked-seeded from capsular plants, and he demonstrated the absence of all philosophical distinction between trees, shrubs, and herbs, for he saw that myrtle-trees would degenerate into shrubs, and certain oleraceous plants become arborescent. Cellular tissue is spoken of as a sort of flesh interposed between the woody tissue or vegetable fibre; and even spiral vessels appear to be indicated under the name of *ines* (*vecs*): leaves are correctly said to have their veins composed both of woody tissue and spiral vessels, and the parallelism of the veins of grasses is particularly pointed out; palm-wood is shown to be extremely different from that of trees with concentric layers; bark is correctly divided into liber and cortical integument, and the loss of the former is said to be usually destructive of life. The nutritive properties of leaves are clearly pointed out, and the power which both surfaces possess of absorbing atmospheric nourishment. Some notion appears to have existed of the sexes of plants, contrary to the opinion of Aristotle, who denied them to the vegetable kingdom; in particular Theophrastus speaks of the necessity of bringing the male dates into contact with the females, a fact which had been stated quite as clearly by Herodotus (i. 193) 100 years before; but it is plain that he had no correct idea upon this subject, for in another place he compares the male catkins of the hazel to the galls of the Kermes oak.

These points are abundantly sufficient to show that among the Peripatetics a considerable amount of tolerably exact knowledge of botany really existed, and that a solid foundation had been laid for their successors.

And in fact it appears that the impulse they gave to investigation did for some considerable time afterwards produce a perceptible effect; for by the time of Pliny it is evident that a considerable addition had been made to the stock of botanical knowledge. It is true that it was much disfigured by the poets, who then, as now, appear to have had only a smattering of the science of their day; but it is incredible that they should have been able to glean that smattering out of any other field than a very rich one. For example, the sexuality of plants, which Aristotle had denied, which Theophrastus had adverted to, is spoken of in positive terms; grafting, in more ways than one, and even budding, are spoken of in language which is remarkably

precise for the words of a poet; and although to these operations were attributed powers which they did not possess, yet it is abundantly plain that the processes were thoroughly understood. The

Angustus in ipso
Fit nodo sinus; huc aliena ex arbore germes
Includunt: adeoque docent inolescere libro.

is as correct a description of the operation called budding as any modern could give in so many words; and it is impossible that such an operation should ever have been devised without a much more large and accurate knowledge of vegetable physiology than it is generally believed that the ancients possessed.

From this time forward all inquiry into matters of science began to decline; under the later Roman emperors science became gradually extinguished; under the Byzantine princes it can scarcely be said to have been preserved, and the little attention it subsequently received from a few obscure writers rather hastened than arrested its downfall.

Upon the revival of science in Europe the writings of the classical and Arabian herbalists were taken as the text-books of the schools, but their errors were multiplied by false translations, their superstitions were admitted without question, and so little was added by the monkish authors, that between the time of Ebn Beithar, who flourished in the thirteenth century, and the year 1532, when the *Herbarum vivæ icones* of Otho Brunfels, a Bernese physician, made their appearance, scarcely a single addition had been made to the slender stock of knowledge of about 1400 species, which are computed by Sprengel to have formed the total amount discovered by all botanists, Greek, Roman, and Arabian, up to the death of Abdallatif of Bagdad. Brunfels describes the state of botany as being in his day most deplorable, as being principally in the hands of the most ignorant persons, and as consisting of a farrago of long and idle commentaries, disfigured 'by myriads of barbarous, obsolete, and ridiculous names.' He deserves to be mentioned as the first reformer in this science, and as the earliest writer who earnestly endeavoured to purify the corrupted streams which had flowed through so many ages of barbarism from the ancient Greek and Roman fountains. His example was speedily followed by Tragus, Fuchs, Matthioli, and others; the knowledge of species rapidly augmented, partly by the examination of indigenous plants and partly by the remarks of the earlier travellers, who about the year 1460 began to turn their attention to the vegetable kingdom; till at last their abundance became so great as to call for the assistance of compilers capable of digesting what and already begun to be scattered through numberless works. The first undertaking of the kind was by Conrad Gesner, a native of Zürich, who died in the year 1565. This excellent man spent the latter part of his life in collecting materials for a general history of plants; he is stated to have caused above 1500 drawings to be prepared for the illustration of his undertaking, but, unfortunately, he died before his project was executed, and his materials were afterwards dispersed. He appears however to have brought about one most important change in science, by discovering that the distinctions and true nature of plants were to be sought in their organs of reproduction rather than in those of nutrition. This was assuredly the first step that had been taken forward in the science since the fall of the Roman Empire, and is abundant evidence of the great superiority of Gesner over all those who had preceded him. From this time collections of species were made by numerous writers; our countryman Turner, Dodoens, Lobel, Clusius, Cæsalpinus, and the Bauhins, were the most distinguished writers between the years 1550 and 1600; and among them the number of known species was so exceedingly increased, especially by the discoveries of Clusius, that it became impossible to reduce them into any order without the adoption of some principle of classification. Hence originated the first attempts at *systematical arrangement*, with which commences

The Second Era.—It is to Matthew Lobel, a Dutch physician residing in England in the time of Elizabeth, that the honour is to be ascribed of having been the first to strike out a method by which plants could be so arranged that those which are most alike should be placed next to each other, or in other words which should be an expression of their natural relations. As may be supposed, this early attempt at the discovery of a natural system was exceedingly rude and imperfect; it is however remarkable for

having comprehended several combinations which are recognized at the present day: *Cucurbitaceæ*, *Stellatæ*, *Gramineæ*, *Labiata*, *Boragineæ*, *Leguminosæ*, *Filices*, were all distinctly indicated; and it may be added that under the name of *Asphodels* he grouped the principal part of modern petaloid monocotyledons. The reasons however why such groups were constituted were not then susceptible of definition; the true principles of classification had to be elicited by the long and patient study of succeeding ages. Among the foremost to take up this important subject was Cæsalpinus, a Roman physician attached to the court of Pope Sixtus V. This naturalist possessed a degree of insight into the science far beyond that of his age, and is memorable for the justness with which he appreciated many of the less obvious circumstances which his predecessors had overlooked. For example, he was aware of the circulation of the sap; he believed that its ascent from the roots was caused by heat; he knew that leaves are cortical expansions traversed by veins, proceeding in part from the liber; he estimated the pith of plants at its true value, and seeds he compared to eggs, in which there exists a vital principle without life; but he denied the existence of sexes in the vegetable kingdom. Improving upon the views of Gesner, he showed how great is the value of the fructification in systematic botany; the flower he said was nothing but the wrapper of the fruit; the essential part of the seed he considered to be what is called the coraculum, that is the double cone of plumule and radicle which connects the cotyledons. In general his views of vegetable physiology were much more just than those of his predecessors, and if he did not avoid the error of supposing certain plants to be mere abortions of more perfect species, as many grasses of corn, he amply redeemed his fame by the correction of other mistakes. From differences in the fruit and the seed of plants, he formed a system which, though purely artificial, and never much employed, had the merit of calling attention strongly to the existence of a class of important characters which had previously been either overlooked or undervalued.

But notwithstanding the attempts thus made by a few distinguished men to elevate the science to a higher station, and to reduce it to some general principles, it still continued to languish and to remain for the most part in the hands of the most ignorant pretenders, and in no country more so than in England. We find, upon the authority of the celebrated Ray, that in this country in the middle of the seventeenth century it was in the most lamentable state. At that time the standard book of English botanists was a publication called Gerarde's 'Herbal,' which was, as Ray tells us, the production of a man almost entirely ignorant of the learned languages, in which nevertheless all books on science were at that time written. The principal part of the work was pirated from the 'Pemptades' of Dodoens, turned into English by one Priest, and, in order to conceal the plunder, the arrangement of Dodoens was exchanged for that of Lobel, while the whole was made up with the wood-blocks of Tabernæmontanus' Kräuterbuch, often unskillfully transposed and confounded. At last a change, as sudden as it was important, was produced in the science by the application of the microscope to botanical purposes.

The Third Era.—About the middle of the seventeenth century this instrument was first employed in the examination of the elementary organs of plants, about which nothing had been previously learned since the time of Theophrastus. The discovery of spiral vessels by Henshaw in 1661, the examination of the cellular tissue by Hook at a somewhat later date, at once excited the attention of observers, and led at nearly the same time to the appearance of two works upon vegetable anatomy, which at once so nearly exhausted the subject, that it can scarcely be said to have again advanced till the beginning of the present century. Grew and Malpighi, the writers thus adverted to, but more especially the former, combined with rare powers of observation a degree of patience which few men have ever possessed. They each examined the anatomy of vegetation in its minutest details, the former principally in the abstract, the latter more comparatively with the animal kingdom. Various forms of cellular tissue, inter-cellular passages, spiral vessels, woody tubes, ducts, the nature of hairs, the true structure of wood, were made at once familiar to the botanist; the real nature of sexes in plants was demonstrated; and it is quite surprising to look back on those days from the present high ground on which botany has taken its stand, and to see how little the views of Grew at least have

subsequently required correction. From him physiological botany, properly speaking, took its origin. Clear and distinct ideas of the true causes of vegetable phenomena gradually arose out of a consideration of the physical properties of the minute parts through whose combined action they are brought about; and a solid foundation was laid for the theories of vegetation which subsequent botanists have propounded: to Grew may also be ascribed the honour of having first pointed out the important difference between seeds with one cotyledon, and those with two, and of having thus been the discoverer of the two great natural classes into which the flowering part of the vegetable kingdom is now divided. Grew, however, was no systematist; it was reserved for another Englishman to discover the true principles of classification, and thus to commence

The Fourth Era.—John Ray, a man of a capacious mind, of singular powers of observation, and of extensive learning, driven from his collegiate employments by the infamous commands of a profligate prince, sought consolation in the study of natural history, to which he had been attached from his youth. Botany he found was fast settling back into the chaos of the middle ages, partly beneath the weight of undigested materials, but more from the want of some fixed principles by which the knowledge of the day should be methodized. Profiting by the discoveries of Grew and the other vegetable anatomists, to which he added a great store of original observation, he in his 'Historia Plantarum,' the first volume of which appeared in 1686, embodied in one connected series all the facts that had been collected concerning the structure and functions of plants: to these he added an exposition of what he considered the philosophy of classification, as indicated partly by human reason, and partly by experience; and from the whole he deduced a classification which is unquestionably the basis of that which, under the name of the system of Jussieu, is every where recognized at the present day. For proofs of this, we refer our readers to the memoir of Ray in the present work: we will only observe in this place that he separated flowering from flowerless plants; that he divided the former into monocotyledons and dicotyledons, and that under these three heads he arranged a considerable number of groups, partly his own, partly taken from Lobel and others; which are substantially the same as what are received by botanists of the present day under the name of natural orders. It is singular enough that the merits of this arrangement of John Ray should have been so little appreciated by his contemporaries and immediate successors, as to have been but little adopted; and that, instead of endeavouring to correct its errors and to remove its imperfections, botanists occupied themselves for several succeeding years in attempts at discovering other systems, the greater part of which were abandoned almost as soon as they were made known Rivinus, Magnol, Tournefort, and Linnæus were the most celebrated of these writers; but the two last alone have had any permanent reputation. Tournefort, who for a long time stood at the head of the French school of botany, proposed in 1694, a method of arrangement, in its principles entirely artificial, but which in some cases was accidentally in accordance with natural affinities. It was founded chiefly upon differences in the corolla, without the slightest reference to physiological peculiarities; and is now forgotten, except in consequence of its having furnished some useful ideas to Jussieu, as will be hereafter shown.

The Fifth Era.—Linnæus was a genius of a different and a higher order. Educated in the severe school of adversity, accustomed from his earliest youth to estimate higher than all other things verbal accuracy and a logical precision, which are often most seductive when least applicable; endowed by nature with a most brilliant understanding, and capable, from constitutional strength, of any fatigue either of mind or body, this extraordinary man was destined to produce a revolution in botany, among other branches of natural history, which in some respects advanced and in others retarded its progress far more than the acts of any one who had preceded him. He found the phraseology bad, and he improved it; the nomenclature was awkward and inconvenient, he simplified it; the distinctions of genera and species, however much the former had been improved by Tournefort, were vague and too often empirical; he defined them with an apparent rigour, which the world thought admirable, but which Nature spurned; he found the classifications of his day so vague and uncertain, that no two persons were agreed as to their value, and for them he substituted a

scheme of the most specious aspect, in which all things seemed as clearly circumscribed by rule and line as the fields in the map of an estate; he fancied he had gained the mastery over nature, that he had discovered a mighty spell that would bind her down to be dissected and anatomized, and the world believed him; in short, he seized upon all the wardrobe of creation, and his followers never doubted that the bodiless puppets which he set in action were really the divine soul and essence of the organic world. Such was Linnæus; the mighty spirit of his day. Let us do this great man that justice which exaggeration on the one hand, and detraction on the other, have too often refused to him; and let us view his character soberly and without prejudice. We shall then admit that no naturalist has ever been his superior; and that he richly merited that high station in science which he held for so many years. His verbal accuracy, upon which his fame greatly depends, together with the remarkable terseness of his technical language, reduced the crude matter that was stored up in the folios of his predecessors into a form that was accessible to all men. He separated with singular skill the important from the unimportant in their descriptions. He arrayed their endless synonyms with a patience and lucid order that were quite inimitable. By requiring all species to be capable of a rigorous definition not exceeding twelve words, he purified botany of the endless varieties of the gardeners and herbalists; by applying the same strict principles to genera, and reducing every character to its differential terms, he got rid of all the cumbersome descriptions of the old writers. Finally, by the invention of an artificial system, every division of which was defined in the most rigorous manner, he was able so to classify all the materials thus purified and simplified, that it seemed as if every one could become a botanist without more previous study than would be required to learn how to discover words in a dictionary. Add to all this, the liveliness of his imagination, the skill with which he applied his botanical knowledge to practical objects, and the ingenuity he showed in turning to the purposes of his classification the newly-discovered sexes of plants, and we shall at once comprehend what it was that exalted Linnæus so far above his contemporaries. But great as the impulse undoubtedly was which Linnæus gave to botany, there were vices in his principles which, although overlooked during his life, have subsequently been productive of infinite evil. There is no such thing as a rigorous definition in natural history; this fact Ray had demonstrated to arise out of the very nature of things; and consequently the short phrases by which species and genera were characterized by Linnæus were found equally applicable to many other plants besides those for which they were intended: hence arose a new source of confusion, inferior only to that which it was intended to correct. Differential characters, which would be invaluable if we had all nature before us, were found in practice to lead to incessant errors, so soon as some new species was introduced into the calculation: they also laboured under the great fault of conveying no idea whatever of the general nature of the plants to which they related: thus the Portuguese botanist Loureiro, who attempted to determine the plants of China by the systematic writings of Linnæus fell into the singular error that the hydrangea was a primrose. With regard to his artificial system of classification, it was found that it looked better in the closet than in the field; that the neatness and accuracy of the distinctions upon which it was divided into groups existed only upon paper, and that exceptions without end encumbered it at every turn. This, which is perhaps inseparable from all systematic arrangements, would not have been felt as so great an evil, if there had been any secondary characters by which the primary ones could be checked, or if the system had really led with all its difficulties to a knowledge of things. But it was impossible to perceive that it led in reality to little more than a knowledge of names, and that it could be looked upon as nothing beyond an index of genera and species. Let us repeat, however, that these objections were of little weight in the time of Linnæus; the force of many of them was hardly felt, when scarcely a twelfth part of the species now known to exist was upon record; and the world was naturally inclined to embrace with ardour the clearness and precision of the Linnæan language, notwithstanding all its faults, in exchange for the cumbersome, vague, or unmethodical descriptions of those who preceded it. The great evil that has arisen out of the system of Linnæus has been this: that it has led to the formation of a large school of

superficial botanists; of men who supposed that nomenclature and verbal criticism constitute the whole objects of the science; who have been distinguished more for their total neglect of everything beyond mere technicalities, than the old botanists for their disregard of the latter; who have had no general views, and apparently no power of applying their means to any intelligible end, and who, consequently, in the countries where they have flourished, have so far lessened the science in public estimation, and done as much to retard its progress as Linnæus did to advance it.

The maxims however of Ray, and the great general views of that illustrious naturalist, were destined not to fade even before the meteoric brilliancy that surrounded the throne of Linnæus. A French botanist, Antoine Laurent de Jussieu, soon entered the field to oppose the latter. In the year 1789, just eleven years after the death of Linnæus, he produced, under the name of 'Genera Plantarum,' an arrangement of plants according to their natural relations, in which the principles of the great English botanist are tacitly admitted, and his fundamental divisions adopted in combination in part with those of Tournefort, and in part with what are peculiar to the author himself. Jussieu possessed in a happier degree than any man that has succeeded him the art of adapting the simplicity and accuracy of the language of Linnæus to the exigencies of science, without encumbering himself with its pedantry. He knew the impossibility of employing any single characters to distinguish objects so variable in their nature as plants; and he clearly saw to what evils all artificial systems must of necessity give rise. Without pretending then to the conciseness of Linnæus in forming his generic characters, he rendered them as brief as was consistent with clearness; without peremptorily excluding all distinctions not derived from the fructification, he nevertheless made the latter the essential consideration; instead of defining his classes and orders by a few artificial marks, he formed them from a view of all the most essential parts of structure; and thus he collected under the same divisions all those plants which are most nearly allied to each other. Hence while a knowledge of one plant does not by any means lead to that of another in the system of Linnæus, it leads directly to the knowledge of many more in the classification of Jussieu; which has accordingly gained the name of the natural system. This at once brought the science back to a healthy state; it demonstrated the possibility of reducing the characters of natural groups to words, contrary to the opinion of Linnæus, who found that task altogether beyond his powers; it did away with the necessity of artificial arrangements, and giving a death-blow to verbal botany, it laid the foundation of that beautiful but still imperfect superstructure, which has been erected by the labours of Brown, De Candolle, and others. If the system of Jussieu were not a return to that of Ray, modified only and improved by modern discoveries, we should certainly have taken this period for the commencement of

The sixth and latest *æra* in our science. But it was reserved for a man whose fame lies chiefly in the literary world to effect the last great revolution that the ideas of botanists have undergone. In 1790, one year after the appearance of Jussieu's *Genera Plantarum*, the German poet Göthe published a pamphlet called 'The Metamorphosis of Plants.' At that time the various organs of which plants consist had been pretty well ascertained, the distinctions between the leaf, the calyx, the corolla, the stamens, and the pistil, were in a great measure understood, and the botanists were not a few who fancied there was nothing more to learn about them. Nevertheless even in the time of Theophrastus a notion had existed that certain forms of leaves were mere modifications of others that appeared very different, as the angular leaves in croton of the round cotyledons or seminal leaves of that plant. Linnæus himself had entertained the opinion that all the parts of a flower are mere modifications of leaves whose period of development is anticipated (*prolepsis plantarum*); Ludwig in 1757, and more especially Wolf in 1768, had stated in express terms that all the organs of plants are reducible to the axis and its appendages, of the latter of which the leaf is to be taken as the universal type. But the theory of Linnæus was fanciful; Ludwig was a writer of too little authority in his day to succeed in establishing a doctrine so much at variance with received opinions; and the theory of Wolf was propounded in a paper upon the formation of the intestines in animals, which

seems altogether to have escaped the observation of botanists. Entirely unacquainted with the writings of the two latter naturalists, but aware of the *Prolepsis Plantarum* of Linnæus, Gôthe took up this important theory, and demonstrated that all those organs to which so many different names were applied, and which, in fact, have so many dissimilar functions to perform, were all modifications of one common type—the leaf; that the bract is a contracted leaf, the calyx a combination of several, the corolla a union of several more in a coloured state, the stamens contracted and coloured leaves with their parenchyma in a state of disintegration, and the pistil another arrangement of leaves rolled up and combined according to certain invariable laws. All this he stated in such clear and precise terms, the arguments upon which he supported his propositions were so simple and so just, and the whole doctrine was explained in language so sober and philosophical, that the mere circumstance of its not having been immediately received all over the scientific world shows in the clearest light how baneful the influence of Linnæan botany had already become; for this beautiful theory, which is the very cornerstone of structural botany, and which is now on all hands admitted to be unassailable, was treated as the idle dream of a poet, and neglected for above twenty years. It has however wrought a change in the ideas of mankind regarding the nature of plants which has already produced the most important results by banishing from the science the complicated and unintelligible distinctions and descriptions with which botany was formerly encumbered, by fixing the manifold combinations of the organs of plants at their true value, and by introducing more just ideas of vegetable physiology.

Here we must bring our sketch of the history of botany to a close. There is no longer any great discovery to announce as having produced a sudden and universal change in the science; its general principles are apparently well understood, and all that botanists of the present century have been able to do has been to work out those principles in detail, to substantiate or modify them by isolated observations, to combine into one consistent whole the multitude of species whose attributes are as numerous as themselves, and gradually to reduce into lucid order the seemingly discordant materials which constitute the vegetable kingdom. The rapidity with which this has been effecting of late years has been in proportion to the disappearance of the Linnæan school; where the system of Linnæus has continued to prevail, as in Sweden, Spain, Portugal, and Italy, progress has been the slowest; where it has only maintained a doubtful struggle with the principles of Ray, as in Germany and England, advance has been more rapid; but it has only been in France, in which the doctrines of Linnæus never could take root, that the march of discovery has been steady and uninterrupted. At the present moment Great Britain, Germany, and France are in the same position; they are all freed from the prejudices of the Swedish school, and are proceeding with equal steps, all guided by the same sound and recognized principles.

The *useful purposes to which botany is applied* are so numerous, that we can only find room for a short explanation of the most remarkable. Agriculture and horticulture are the two arts with which its relation is the most obvious; for although a considerable part of all the practices in each of them grew out of mere experience, or was discovered by chance, yet there is no possibility of improving them except by other fortunate accidents, or of advancing them at a more rapid rate unless by the application of vegetable physiology. The world, especially that part of it to which these arts belong, is little accustomed to trace to their source the common practices with which it has been familiar from its infancy; and it is far from suspecting that many of the operations which are intrusted to the most ignorant rustics have one by one and piecemeal been hit upon during the careful study of nature by philosophers whose names it never heard. Gardening and husbandry may be defined as the arts, firstly, of improving the quality of various useful plants, and, secondly, of increasing the quantity which a given space of earth is capable of producing.

To improve the quality of any one plant, and to render it better adapted to the uses of mankind upon scientific principles, is a very complicated process, and is to be effected in many different ways, all of which require an intimate knowledge of the nature of the vital actions of plants, and

of the degree in which they are affected by either external or internal causes. For example, a particular kind of flax produces fibres which are too coarse for the manufacturer; it is impossible to know how those delicate elementary tubes are to be rendered fine without being aware of the manner in which vegetable tissue is affected by light, air, and earth. The flavour of some fruit is too acid; it is the botanist only who could have discovered how to increase the quantity of saccharine matter. Potatoes are sometimes watery and unfit for food; we learn from vegetable physiology that this is often caused by the leaves, in which the nutritious flour of the potato is originally formed, not being sufficiently exposed to solar light, the great agent in causing the production of vegetable secretions. The leaves of the tea plant are harmless and only slightly stimulating in certain latitudes, they become narcotic and unwholesome in others; this apparent puzzle is explained by the connexion that exists between climate and vegetation, a purely botanical question. Certain races of plants may exist, of which one is too vigorous, the other too debilitated for the purposes of the cultivator; the botanist shows how an intermediate race may be created, having the best qualities of both.

Certain vegetable productions are susceptible of being produced in particular latitudes, others are not, or not to any useful purpose: for instance, in England the vine will never yield grapes capable of making such wine as even that of champagne, nor will tobacco ever acquire that peculiar principle which gives it so great a value if grown in other countries; and yet both these plants flourish in the soil of England. The botanist can explain why this is, and thus prevent the commencement of speculations which can never end except in loss and disappointment.

The quantity of produce which may be procured from a given space of ground varies very much according to the skill of the cultivator, but that skill is in reality the mere application of the rules of vegetable physiology to each particular case; an application that is most frequently made unconsciously, but which nevertheless is made. We are too apt to overlook causes in effects, and to ascribe the improvements we witness to a mere advance in art, without considering that that advance must have had a cause, and that the cause can only be the working of some master hand, which is afterwards blindly followed by the community. The crops of orchard fruit are doubled and trebled in many places; old exhausted races are replaced by young, vigorous, and prolific ones; the cider and perry farmer will feel the benefit of this, but he will forget that he owes the change to the patient skill of a vegetable physiologist. The produce of the potato is augmented in the same proportion; twice at least the ordinary quantity of this important article of food may now be obtained from every field: the peasant will feel the additional comfort thus diffused around him, but he will never have heard of the name of Knight; nor will he know after a few years that the produce of the land was ever smaller.

Nor is it alone to articles of food that this science is to be applied; next in importance to food are fire and shelter, both of which are mainly furnished by timber. The laws of nature which regulate the production of this substance are among the most curious in science; we possess the most absolute control over them; we hold in our very hands the means of regulating their action, and if we neglect them, as is too often the case, it is not science which is to blame, but those who undervalue and neglect her. Because trees will grow without assistance, and because, in spite of neglect and ignorance, timber is perpetually renewing itself upon the earth, we forget that either its rate of production may be accelerated, or its quality improved. The writer of this has seen plantations, in this country, made for particular purposes at a large expense, totally ruined, with reference to the objects of those who planted them, from ignorance of the simplest laws of vegetable physiology.

Some allusion has already been made to the important results which arise out of the study of the connexion between vegetation and climate. The quality of all vegetable productions is influenced essentially by external causes: intensity of light, atmospheric pressure, humidity, temperature, and seasons, are the great agents which modify the tissue, which control development, and which regulate the formation of sensible properties. Various combinations of these and other external causes are what constitute diversities of climate, and it is therefore obvious that the connexion between the latter and vegetation is of the most

intimate nature. But as this is a branch of the science of comparatively modern origin, there are few instances of its application: one of the most striking was the declaration of Mr. Royle, that cotton might be obtained in the East Indies equal to the finest from America, a prophecy which has already been fulfilled in consequence of the practical adoption of plans similar to those which he theoretically suggested. Can tea be cultivated as advantageously elsewhere as in China, and what are the causes of the failure of the attempt in Brazil, in Madeira, and in the Indian Archipelago? Here is a single question of immense importance, involving the interests of millions of human beings, and affecting the pecuniary interests of Great Britain as much as any commercial problem ever did; the botanist, and the botanist only, can give a safe and certain answer to it.

The cases hitherto cited refer chiefly to the objects of vegetable physiology; systematic botany bears upon practice not less usefully, but in a different way. If the only advantage of classifying plants were to acquire the power of discovering their scientific names, even that would have a certain kind of interest, because it would insure a uniformity of language in speaking of them; if it had the additional property of demonstrating the gradual connexion that is discoverable between all the beings in the organized part of the creation, of proving that there is an insensible transition from one form of living matter to another, without break or interruption, and of explaining in a clear and intelligible manner the nature of that universal harmony of which philosophers are used to talk, the interest and importance of botanical classifications would be still further enhanced; but the practical importance of them would still be extremely limited. It is only when we look to the coincidence between botanical affinities and sensible properties, and to the external indications of internal qualities, that we perceive the great features of its utility to man. If the qualities of every plant required to be ascertained by a circuitous and tedious series of experiments, no life could be long enough for the task, nor, if it were, could any memory however powerful remember so extensive a series of facts; and if, under such circumstances, botanists whose whole life is occupied in the study should be unable to master the difficulties, systematic botany could never be applied at all to any useful purpose, because it must of necessity be far beyond the acquirement of those persons who would be most likely to have occasion to employ it. But it was long since suspected that plants which agree with each other in organization also agree in the secretions which may be supposed to be the result of that organization. Linnæus, in his dissertation upon the properties of plants, declares that species of the same genus possess similar virtues; that those of the same natural order are near each other in properties, and that those which belong to the same natural class have also some relation to each other in their sensible properties. This doctrine is now admitted on all hands, among men of science, to be incontrovertible, and places the practical

utility of systematic botany in the most striking light. Instead of endless experiments leading to multitudes of incongruous and isolated facts, the whole history of the medicinal or economical uses of the vegetable kingdom is reduced to a comparatively small number of general laws; and a student, instead of being compelled to entangle himself in a maze of specific distinctions, is only obliged in practice to make himself acquainted with the more striking groups; and having accomplished this, he is enabled to judge of the properties of a species he had never seen before, by what he knows of some other species to which it is related. Some idea of the extent to which this power of judging of plants *a priori* is practically useful may be formed from this—that supposing the vegetable kingdom to consist of 100,000 species, arranged in 6 or 7000 genera, the vast mass of characters required to distinguish them will be collected under about 300 heads, a knowledge of not more than two-thirds of which will be required for the purposes of the general observer. Thus the common hedge mallow is a mucilaginous, inert plant, whose woody tissue is tough enough to be manufactured into cordage; it has certain botanical characters, which are readily observed and remembered; and it belongs to a group of plants consisting of not fewer than 700 species. It is only necessary to understand the structure of the common mallow to recognize all the remainder of the group, and to be aware of their uses and properties; so that a person in a foreign country who finds a plant agreeing with the mallow in those marks by which the *Malvaceous* order is known, although he should never have seen or heard of the plant before, would immediately recognize it to be mucilaginous and inert, and would expect to find its vegetable fibre tough enough to be manufactured into cordage. It is this class of facts which alone can lead with any certainty to the discovery in one country of substitutes for the useful plants of another; it has shown the similarity between the violet roots of Europe and one of the kinds of ipecacuanha of South America; that the astringency of the alum-root of the United States finds a parallel in those of the geraniums of England; that madder has its representative in the Isle of France, cinchona in India, and that Indian-rubber trees exist in the East as well as in the West.

It is not however every kind of systematic botany which leads to these important results: it is not arrangements, however clear, which depend upon accordances in one or two arbitrary and unimportant points of structure; but it is that philosophical view of nature which separates to the greatest distance species which are the most dissimilar in their organization, and which places side by side such as are more like each other than anything else, filling up all the space between such extremes upon exactly the same principle; till at last, take a species where you will, it will be found in the midst of its nearest kindred and most natural allies. This, which is called the *natural system*, will be explained hereafter under the head of CLASSIFICATIONS in botany.

A Glossary of the Technical Terms most commonly employed in Botany.

Abnormal, contrary to general rules
Accumbent, lying against anything, in distinction to lying upon; as the cotyledons of some cruciferous plants
Acerose, stiff and slender and sharp-pointed, as the leaves of a pine-tree
Achenium, a small, hard, one-seeded fruit, resembling a seed
Aciculate, needle-shaped
Acinaciform, scymitar-shaped
Acinus, a bunch of succulent berries, as of grapes
Acrogen, a plant which grows at its end only, without increasing in diameter, as ferns, and all flowerless plants
Aculeus, a prickle
Aculeate, covered with prickles
Acuminate, tapering to the point, but flat
Adnate, growing to anything by the whole length
Adventitious, appearing accidentally
Distivation, the arrangement of the parts of the flower before they expand
Alabustrus, a flower-bud
Albumen, a substance interposed in some seeds between the embryo and the seed coats
Albuminum, the young wood; sap-wood

Amentum, a catkin; the male inflorescence of the hazel, &c.
Amplicaulis, clasping a stem
Anastomosing, the growing together of two parts which meet from different directions
Androus, a Greek termination expressive of the male sex
Anfractuous, doubled abruptly in several different directions
Angiocarpous, having seeds enclosed in a pericarp
Annotinous, a year old
Anther, the case containing pollen
Apophysis, the enlarged base of the theca of some mosses
Apothecium, the shield, or mass of reproductive matter of a lichen
Appendiculate, having some kind of appendages
Apetalous, having no petals
Apiculate, abruptly pointed
Apocarpous, where the carpels are distinct from each other
Arachnoid, resembling a spider's web
Arcolade, divided into little spaces
Ariol, a peculiar wrapper of some seeds, as the mace of the nutmeg

Arista, the beard or awn of grasses
Asci, the cases in which the spores of lichens are enclosed
Acidulum, a hollow leaf looking like a water vessel; as the pitcher of *Nepenthes*
Attenuated, gradually tapering to a point without becoming flat
Auriculate, having two lobes (like ears) at the base
Awn, see *Arista*
Axis, the root and stem either taken together or separately
Axi, the acute angle formed by the junction of the leaf, &c. to its axis
Axillary, growing in an axil

Baccate, fruit covered with soft flesh
Barbate, covered with long hairs resembling a beard
Beard, a tuft of long hairs
Biconjugate, in two pairs, placed side by side
Bidentate, having two teeth
Bifarius, arranged in two rows
Bifid, divided into two shallow lobes
Bifoliate, having two leaflets
Bifurcate, twice forked

Bijugous, in two pairs, placed end to end
Binate, growing in pairs
Bipartite, divided into two deep lobes
Bipinnate, twice pinnate
Biseriate, twice serrate
Brachiate, when branches stand nearly at right angles to the stem from which they proceed
Bract, the leaf or leaflet from the axil of which a flower grows
Bulb, a scaly, underground bud
Bulbotuber, a short, roundish, underground stem resembling a bulb

Caducous, falling off sooner or later
Cæsious, of a bluish grey colour
Cæspitose, growing in tufts
Calcar, a spur or horn; as in the nasturtium
Calculate, having a spur or horn
Calyculate, having a whorl of bracts on the outside of a calyx, or of an involucre
Calyptra, the hood of a moss
Calyx, the external envelope of a flower
Cambium, a viscid secretion formed in the spring between the bark and wood of Exogens

Campulate, bell-shaped
Canaliculate, channelled
Cancellate, a leaf which has veins without connecting parenchyma
Capitate, growing in a head
Capitulum, a collection of flowers in a head
Capule, any dry many-seeded fruit
Carinate, having a kind of keel
Carnose, fleshy
Carpel, one of the parts of a compound pistil; a single leaf rolled up into one of the integuments of a pistil

Carunculite, a seed having fungous excrescences growing near its hilum
Caryopsis, a dry one-seeded fruit resembling a seed, but with no distinction between the seed coat and pericarp
Caudate, prolonged into a sort of tail
Cauline, of or belonging to the stem
Cerataous, drooping
Chalazu, a spot on a seed indicating the place where the nucleus is united to the seminal integuments

Ciliated, fringed with hairs like an eyelash
Cinereous, ash-coloured
Circinate, rolled inwards from the point to the base
Circumcisile, dividing into two parts by a spontaneous transverse separation
Cirrhous, terminating in a tendril
Clavate, club-shaped
Claw, the stalk of a petal
Clypeate, resembling a round buckler
Cochleate, resembling the bowl of a spoon
Collum, the point where the stem and root are combined

Columnella, a central part of the fruit of a moss, round which the spores are deposited
Column, the combination of stamens and style in Orchideous and other plants
Comose, having hairs at one or both ends, if speaking of seeds; being terminated by coloured empty bracts, if applied to inflorescences

Conduplicate, doubled together
Confluent, growing together so that the line of junction is lost to the sight
Conjugate, growing in pairs
Connate, growing together so that the line of junction remains perceptible
Connective, the fleshy part that combines the two lobes of an anther
Convenient, converging, as the anther of a potato blossom
Conoidal, approaching a conical form
Continuous, proceeding from something else without apparent interruption
Contorted, twisted in such a way that all the parts have a similar direction, as the segments of the flower of an Oleander

Convolute, rolled together
Coraculum, the rudimentary axis which connects the cotyledons of the embryo
Cordate, heart-shaped

Coriaceous, of a leathery texture
Cormus, a solid, roundish, underground stem, as in Crocus

Corneous, of a horny texture
Corniculate, shaped like a slender horn
Corolla, the second of the two envelopes that surround the stamens and pistil
Corona, a combination of fertile and barren stamens into a disk, as in Stapelia
Corymbose, when the branches surrounding a common axis are shortest at the top and longest at the bottom, so as to form a level-topped whole
Costa, the midrib of a leaf
Cotyledons, the leaves of the embryo
Crateriform, shaped like a goblet
Crenelled or *Crenated*, having rounded notches at the edges

Crested, having some unusual and striking appendage arising from the middle
Cruciate, when four parts are so arranged as to resemble the arms of a Maltese cross
Cucullate, hooded, rolled inwards so as to conceal anything lying within
Culm, the straw of grasses
Cuneate, wedge-shaped
Cupule, the cup of the acorn, the husk of the filbert, chestnut, &c.; a peculiar combination of bracts

Cuspidate, abruptly rounded off with a projecting point in the middle
Cuticle, the external skin
Cyathiform, cup-shaped, more contracted at the orifice than crateriform
Cyme, an inflorescence having a corymbose form, but consisting of repeatedly-branched divisions
Cymbiform, having the form of a boat
Cymose, resembling a cyme in appearance

Decandrous, having ten stamens
Deciduous, falling off
Declinate, curved downwards
Decumbent, lying prostrate, but rising again
Decurrent, produced downwards, as the base of a leaf down the stem
Decussate, crossing at right angles
Dehiscence, the act of opening of anther or fruit

Deltoid, having the form of a triangle or Greek Δ
Dendroidal, resembling a small tree
Dentate, with sharp-pointed notches and intermediate curves instead of re-entering angles
Depauperated, imperfectly developed; looking as if ill-formed from want of sufficient nutriment
Depressed, flattened from point to base
Diadelphous, having the stamens in two parcels

Diaceous, having stamens on one plant and pistils on another
Diantrous, having two stamens
Dichotomous, repeatedly divided into two branches
Dicotyledonous, having two cotyledons
Didynamous, having two pairs of stamens of unequal length
Didymous, growing in pairs, or twins; only applied to solids and not to flat surfaces

Digitate, fingered, diverging from a common centre, as the fingers from the palm
Dimidiate, half-formed, or halved, or split into two halves
Dipterous, having two wings
Discoidal, with the central part of a flat body differently coloured or marked from the margin
Disk, a fleshy circle interposed between the stamens and pistils

Dissepiments, the vertical partitions of a compound fruit
Distichous, arranged in two rows
Divaricating, diverging at an obtuse angle
Dodecandrous, having 12 stamens
Dolabriform, hatchet-shaped
Drupe, such a fruit as the peach, consisting of a stem surrounded by flesh or fibrous matter

Ducts, spiral vessels that will not unroll
Dumose, having a compact bushy form
Duramen, the heart-wood of timber

Echinate, covered with hard sharp points
Elaters, little spirally-twisted hygroscopic threads that disperse the spores of *Germinations*
Elementary organs, the minute parts of which the texture of plants is composed
Emarginate, having a notch at the point
Embryo, the rudimentary plant before germination commences
Endocarp, the hard lining of some pericarps

Endogen, a plant which increases in diameter by addition to its centre, as a palm-tree
Enneandrous, having 9 stamens
Ensiform, having the form of a straight and narrow sword blade
Epicarp, the external layer of the pericarp
Epidermis, the skin of a plant, in the language of some writers; the cortical integument according to others

Epigynous, growing upon the top of the ovary, or seeming to do so
Equitant, when leaves are so arranged that the base of each is enclosed within the opposite base of that which is next below it; as in Iris
Estivation, see *Estivation*
Exogen, a plant which increases in diameter by the addition of new wood to the outside of the old wood; as an oak-tree

Farinaceous, mealy
Fasciated, banded
Fasciculated, collected in clusters
Fastigate, when the branches of any plant are pressed close to the main stem, as in the Lombardy poplar
Filament, the stalk of the anther
Filiform, slender and round like a thread
Fistular, tubular but closed at each end, as the leaf of an onion

Flabelliform, fan-shaped
Flagelliform, resembling the thong of a whip
Flexuose, wavy
Floccose, covered with little irregular patches of wooliness
Floret, a little flower
Floscule, ditto
Foliaceous, having the colour and texture of a common green leaf

Foliation, the arrangement of young leaves within the leaf-bud
Follicle, a simple fruit opening by its ventral suture only
Foramen, the passage through the integuments of an ovule by which impregnating matter is introduced into the nucleus
Fovilla, the fertilizing principle of pollen
Fronde, the leaf of a fern or of a palm

Fruit, the full-grown ripened pistil
Fugacious, lasting but a short time
Fungoid, resembling a fungus; that is, irregular in form and fleshy in texture
Funiculus, the stalk by which some seeds are attached to the placenta
Fusiform, spindle-shaped, thickest in the middle, and tapering to each end

Galbulus, a small cone whose scales are consolidated into a fleshy ball, as in Juniper
Galea, the upper lip of a labiate flower
Genuiculate, knee-jointed, when a stem suddenly in its middle
Gibbous, prominent, projecting
Glabrous, having no hairs
Glabrate, the same as ensiform, but less and shorter
Gland, 1. the fruit of the oak, the hickory, &c.; 2. an elevation of the cuticle which usually secretes either acrid or resinous matter
Glandular, covered with glands of the second kind

Glaucous, covered with bloom like a plum
Glochidate, covered with hairs which are rigid and hooked at their point
Glume, one of the bracts of grasses
Gynnospermous, having seeds which ripen without being enclosed in a pericarp
Gynobase, an elevated part of the growing point of a flower-bud, rising between the carpels and throwing them into an oblique position
Gyrate, see *Circinate*. Also, surrounded by an elastic ring, as the theca of ferns
Hastate, having the form of a halbert-head; that is, with a lance-shaped centre crossed at the base by two lobes of a similar form standing at right angles with the centre
Helmet, the hooded upper lip of some flowers
Heptandrous, having 7 stamens
Hexandrous, having 6 stamens
Hilum, the scar left upon a seed when it is separated from the placenta
Hirsute, covered with harsh long hairs
Hymenium, the gills of a mushroom; that part in Fungi where the spores are placed
Hypocrateriform, salver-shaped; having a cylindrical tube and a flat border spreading away from it
Hypogynous, arising from immediately below the pistil
Icosandrous, having 20 or more perigynous stamens
Inbricated, overlapping, as tiles overlies each other on the roof of a house
Incumbent, lying upon any thing
Indehiscent, not opening when ripe
Induplicate, doubled inwards
Indusium, the membrane that overlies the sori of ferns
Inferior, is said of a calyx when it does not adhere to the ovary; is said of an ovary when it does adhere to the calyx
Inflorescence, the collection of flowers upon a plant
Infundibuliform, shaped like a funnel
Innate, growing upon any thing by one end
Innovations, the young shoots of mosses
Intercellular, that which lies between the cells or elementary bladders of plants
Internode, the space between two nodes
Interrupted, when variations in continuity, size, or development alternately occur in parts which are sometimes uniform; as when pinuated leaves have the alternate leaflets much the smallest, and when dense spikes are here and there broken by the extension of internodes
Involucere, a collection of bracts placed in a whorl on the outside a calyx or flower-head
Involute, rolled inwards
Labellum, one segment of a corolla, which is lower than the others, and often pendulous
Labiata, divided into an upper and a lower lip, as the corolla of dead nettle
Lacunose, having numerous large deep depressions or excavations on its surface
Lamina, the blade of a leaf
Lanceolate, shaped like a lance-head; that is, oval, tapering to both extremities
Lateral, originating from the side of any thing
Lutea, the vital fluid of vegetation
Lax, not compact or dense
Leaflet, a division of a compound leaf
Leyune, a kind of fruit like the pod of a pea
Lenticular, small, depressed, and doubly convex
Lepidote, covered with a sort of scurfiness
Leprous, the same
Liber, the newly-formed inner bark of Exogens
Ligula, a membranous expansion from the top of the petiole in grasses
Limb, the blade or expanded part of a petal
Linear, very narrow, with the two sides nearly parallel
Lip, see *Labellum*.

Loculicidal, when the carpels of a compound fruit dehisce in such a way that the cells are broken through at their back
Locusta, the spikelet, or collection of florets of a grass
Lomentum, a legume which is interrupted between the seeds, so as to separate into numerous transverse portions
Lunate, formed like a crescent
Maniculate, when hairs are interwoven into a mass that can be easily separated from the surface
Marginal, of or belonging to the edge of any thing
Medullary, of or belonging to the pith
Micropyle, a small passage through the seed, called the foramen when speaking of the ovule. See *Foramen*
Mitriiform, conical, hollow, open at the base, and either entire there or irregularly cut
Monadelphous, with the stamens united into one parcel
Monandrous, with one stamen only
Moniliform, shaped like a necklace
Monopetalous, with several petals united into one body by their edges
Mucronate, tipped by a hard point
Multifid, divided into many shallow lobes
Multipartite, divided into many deep lobes
Muricated, covered with short, broad, sharp-pointed tubercles
Muriform, resembling the bricks in the wall of a house
Navicular, shaped like a very small boat
Nectary, any organ that secretes honey
Nerves, the stronger veins of a leaf
Node, the part of a stem from which a normal leaf-bud arises
Normal, according to general rules
Nucleus, the central part of an ovule, or a seed
Nucule, a small hard seed-like pericarp
Oblique, larger on one side than on the other
Ochrea, two stipules united round the stem into a kind of sheath
Octandrous, having eight stamens
Operculum, the lid of the theca of a moss
Ovary, the hollow part of a pistil containing the ovules
Ovate, having the figure of an egg
Ovule, a rudimentary seed
Palate, the lower surface of the throat of a labiate corolla
Paleaceous, covered with pales
Palea, either the inner bracts of the inflorescence of a grass, or the bracts upon the receptacle of the flower-head of a Composita
Palmate, the same as digitate, only the divisions more shallow and broader
Panduriform, oblong, narrowing towards the base, and contracted below the middle
Panicle, a compound raceme; a loose kind of inflorescence
Papilionaceous, a flower consisting of standard, wings, and keel, like that of a pea
Pappus, the calyx of a Composita, as of dandelion
Parenchyma, the pulp that connects the veins of leaves
Parietal, growing from the lining of any thing
Pectinate, divided into long, close, narrow teeth like a comb
Pedate, palmate, with the lateral segments lengthened and lobed
Pedicel, one of a great many peduncles
Peduncle, a flower-stalk
Peltate, attached within the margin
Pentandrous, having five stamens
Perfoliate, surrounding a stem by the base, which grows together where the margins touch
Perianth, a collection of floral envelopes, among which the calyx cannot be distinguished from the corolla, though both are present

Pericarp, the shell of a fruit of any kind
Perichatium, the leaves at the base of the stalk of the fruit of a moss
Perigone, same as Perianth
Perigynous, growing from the sides of a calyx
Perisperm, same as albumen
Peristome, a curious set of processes surrounding the orifice of the theca of a moss
Personate, laid thickly over with a woolly substance ending in a sort of meal
Personate, labiate, with the palate of the lower lip pressing against the upper lip
Petal, one of the parts of a corolla
Petaloid, resembling a petal in colour and texture
Petiole, the stalk of a leaf
Petiolear, of or belonging to the petiole
Phyllocladum, a petiole transformed into a flat leaf-like body
Pileus, the cap of a mushroom
Pilose, covered with short fine hairs
Pinnate, divided into a number of pairs of leaflets; *bipinnate*, each leaflet is also pinnate; *tripinnate*, each secondary leaflet pinnated also
Pinnatifid, divided in a pinnated manner nearly down to the midrib
Pistil, the combination of ovary, style, and stigma
Pith, the central column of cellular tissue in an Exogen
Placenta, the part of the ovary to which the ovules are attached
Plane, quite flat
Plumule, the rudiment of a stem in the embryo
Pollen, the powder contained in an anther
Pollen-tubes, the membranous tubes emitted by pollen after they fall on the stigma
Polyadelphous, when the stamens are combined into more than two parcels
Polyandrous, when there are more than 20 hypogynous stamens
Polyptalous, when the petals are all distinct
Pome, a fruit like that of the apple, pear, &c.
Praefloration, same as *Æstivation*
Prickle, same as aculeus
Primine, the external integument of the ovule
Pseudobulb, the solid above-ground tuber of some Orchidæ
Pubescent, covered with very fine soft down
Pulverulent, covered with a powdery appearance
Pukamen, same as Endocarp
Pyriform, shaped like a pear
Quartine, the innermost integument but one of the ovule
Quinate, combined in fives
Quintine, the innermost integument of the ovule
Raceme, an inflorescence like that of the currant
Rachis, the axis of inflorescence
Radical, arising from the root
Radicle, the rudimentary root in the embryo
Ramenta, soft, ragged, chaff-like hairs growing upon the petiole of ferns
Raphæ, the line of communication between the hilum and chalaza
Raphides, acicular or other crystals scattered among vegetable tissue
Reniform, kidney-shaped
Resupinate, inverted, so that the part which is naturally lowermost becomes uppermost
Reticulated, traversed by veins having the appearance of network
Retuse, blunt, and turned inwards more than obtuse
Rhizoma, a creeping stem like that of Iris
Ringent, same as Personate
Root-stock, same as Rhizoma
Rostrate, furnished with a sort of beak
Rosulate, having the leaves arranged in little rose-like clusters
Ruminated, pierced by numerous perforations full of chaffy matter like a nutmeg

Rhizom, the prostrate stem of such plants as the strawberry

Sagittate, resembling the head of an ancient arrow

Samara, a kind of one-seeded indehiscent pericarp, with a wing at one end

Sapwood, the newly-formed wood, which has not been hardened by the deposit of secreted matter

Sarcocarp, the intermediate fleshy layer between the epicarp and endocarp

Scope, the flowering-stem of a plant

Scale, an abortive leaf

Scarious, dry, thin, and shrivelled

Scrobiculate, irregularly pitted

Scutellum, the fructifying space upon the thallus of a lichen

Secundine, the second integument of the ovule

Secund, arranged or turned to one side

Sepals, the leaves of the calyx

Septa, same as Dissepiment

Septicidal, when the dissepiments of a fruit are divided into two plates at the period of dehiscence

Septifragal, when the dissepiments of a fruit are broken through their middle by the separation of the back of the carpels from the centre

Sericous, silky

Serrate, toothed like the edge of a saw

Sessile, seated close upon any thing, without a stalk

Setose, covered with setæ or bristles

Shield, the fructification of lichens

Sigmoid, bent like the letter S

Siliqua, a short two-valved pod, such as is found in garden cress

Siliqua, the same but longer, as in the cabbage

Sinuate, turning in and out in an irregular manner

Sori, the fructification of ferns

Spadix, the inflorescence of an arum; an axis closely covered with sessile flowers, and enclosed in a spathe

Spadicous, resembling a spadix, or bearing that kind of inflorescence

Spathaceous, enclosed within a spathe, or bearing that kind of bract

Spathe, a large coloured bract which encloses a spadix

Spatulate, shaped like a druggist's spatula; that is, long, narrow, and broadest at the point

Spike, an inflorescence in which the flowers are sessile upon their axis

Spikelet, one of a great many small spikes collected in a mass as in grasses

Spine, a stiff, sharp-pointed, leafless branch

Spongiola, or *Sporogel*, the tender, growing tip of the root

Spor, or *Sporule*, the reproductive body of flowerless plants, analogous to the seed of flowering plants

Squarrose, composed of parts which diverge at right angles, and are irregular in size and direction

Stamen, the fertilizing organ of a flower, consisting of filament and anther

Standard, the upper single petal of a papilionaceous flower

Stellate, arranged in the form of a star

Stigma, the upper end of the style, on which the pollen falls

Stipe, the stalk that bears the head of a mushroom; also the stalk of the leaf of a fern; also the stalk of any thing except of a leaf or a flower

Stipule, the scale at the base of some leaf-stalks

Stipulate, furnished with stipules; *exstipulate*, having no stipules

Stomate, a minute hole in a leaf, through which respiration is supposed to be carried on; a breathing pore

Strigose, covered with stiff unequal hairs

Strophiolate, having little fungous excrescences surrounding the hilum

Stypose, having a tuft of hairs in the middle or at the end

Style, the stalk of the stigma

Subulate, awl-shaped

Syncarpous, having the carpels consolidated

Tere, taper

Ternate, united in threes

Testa, the skin of the seed

Tetradynamous, having six stamens in four parcels; two of which consist of two stamens, and two of one each

Tetrandrous, having four stamens

Thallus, the leafy part of a lichen; the union of stem and leaf in those and some other tribes of imperfect plants

Theca, the case which contains the sporules of flowerless plants

Tomentose, covered with short close down

Toothed, the same as Dentate

Torulose, alternately contracted and distended

Torus, the growing point of a flower, on which the carpels are placed

Triandrous, having three stamens

Trifarious, arranged in three rows

Trifid, divided into three lobes

Trifoliolate, having three leaflets

Tripartite, divided into three deep divisions

Tripartite, when each leaflet of a pinnate leaf is pinnate; and the leaflets of the latter are pinnate also

Triternate, when each leaflet of a ternate leaf is ternate, and the leaflets of the latter are ternate also

Truncate, abruptly cut off

Tube, the part of a flower where the base of the sepals, petals, or stamens are united

Tuber, a deformed, fleshy kind of underground stem

Turbinate, shaped like a spinning top

Umbel, an inflorescence whose branches all radiate from one common point

Umbilicate, having a depression in the middle

Umbonate, having a boss or elevated point in the middle

Undulated, wavy

Unguculate, furnished with a claw, or short stalk

Urceolate, shaped like a pitcher

Utricle, a small bladder

Vagina, the sheath formed by the convolution of a flat petiole round a stem

Valve, one of the parts into which a dehiscent body divides

Vascular, containing vessels; that is, spiral vessels or ducts

Ventricose, inflated

Vernation, the manner in which the young leaves are arranged in their leaf-bud

Verrucose, covered with warts

Versatile, swinging lightly upon a sort of pivot

Verticillate, arranged in a whorl

Vezillum, same as standard

Villose, covered with long, soft, shaggy hairs

Virgale, having long, slender rodlike shoots

Vivellus, a fleshy bag, interposed between the embryo and albumen in some seeds

Vittate, striped, as distinguished from fasciate or banded

Whorl, an arrangement of more leaves than two around a common centre upon the same plane.

BOTANY BAY is situated on the E. coast of Australia, which coast is commonly called New South Wales, but should properly be called Cook's Land, having been discovered by this great navigator in his first voyage. He entered Botany Bay and examined it as well as his short stay permitted. He found the bay capacious, safe, and convenient. The entrance is a little more than a mile broad, but the bay afterwards enlarges to about three miles in width. He describes the soil about it as either a swamp or as light sand, and the face of the country as finely diversified by wood and lawn. The trees, he adds, are tall and straight, and without underwood, standing at such a distance from each other, that the whole country, at least where the swamps do not render it incapable of cultivation, might be cultivated without cutting down one of them; between the trees the ground is covered with grass, of which there is abundance. The great quantity of plants found there by the naturalist accompanying him in his first voyage induced him to call it Botany Bay, and he considered it a suitable place for a new settlement.

In 1788 it was resolved to found in the southern hemisphere a penal settlement, and Botany Bay was thought the fittest place. Governor Phillip accordingly set sail directly for it, but he was soon convinced that this place laboured under great disadvantages. The bay indeed is extensive, and good anchorage is found in 4, 5, 6 and 7 fathoms water; but both on the N. and S. sides and on the bottom of the bay flats extend to a great distance from the shore, having only 4 or 5 ft. water on them. The river which falls into the bay at its W. extremity, and is now called

George's River, can only be navigated by boats. It was also found that the anchorage which lies contiguous to the entrance of the bay was in its whole extent exposed to E. winds, which, especially from the N.E. and S.E. quarter set in a prodigious sea. Governor Phillip therefore resolved to examine the neighbouring coast, in the hope of finding a more advantageous place for the new settlement. Not many miles to the north of Botany Bay he entered Port Jackson, a similar inlet, which was likewise discovered and named by Cook, who however did not think it worth his while to enter it, because it had the appearance of an open bay. Governor Phillip discovered on its southern shore excellent anchorage sheltered from all winds, and here he founded the town of Sidney.

Botany Bay has remained neglected, but the newest maps indicate that on its northern shores some places are inhabited and cultivated, probably on account of the neighbourhood of Sidney, and of the facility of disposing of agricultural produce. It is in 34° S. lat., and 151° E. long., according to the determination of Cook. (*Cook's First Voyage*; Governor Phillip's *Voyage*, and Hunter's *Discoveries*.)

BOTH, JOHN and **ANDREW**, two eminent painters, were born at Utrecht, the former in the year 1610; the birth of the latter is of uncertain date. Their father was a painter on glass, and it is probable they received their first instructions from him. They were placed at an early age under Abraham Bloemart; and in their youth went to Italy to perfect themselves in their art. Here they acquired a great reputation, John painting landscapes after the man-

ner of Claude (to whom only he has been considered inferior), and Andrew adorning his brother's scenes with figures in the style of Bamboccio. They continued in Italy working in concert until separated by death. There is much confusion among writers as to which died first. One of them was drowned by falling into a canal at Venice, in the year 1650, returning late from a supper party; and the survivor then left Italy, and returned to settle at Utrecht. From the fact of his painting portraits and conversation pieces, it is most probable that Andrew was the survivor, and that John, the landscape-painter, perished in Italy. Andrew died six years after his brother, his end being hastened by grief.

The landscapes of John are glowing with colour and sunshine, and rich in beauty and natural effects; his handling is light, free, and facile, so that he sometimes painted without an outline. A fulvous tint which occasionally pervades his landscapes has been objected to; but in his best productions this fault is corrected. He has less studied elegance than Claude, and his pictures are more like common nature; but his composition is far less perfect, and his artifices less artfully concealed. The extreme beauty of his colouring however procured him the title, by which he is still known, of Both of Italy. The figures by Andrew are above all comparison superior to those of Claude; and the joint productions of the brothers, in which each laboured to set off the other, have ever been considered of the highest value.

BOTHNIA, or **BOTTENA**, is a name which was given at some remote period to the countries on both sides of the Gulf of Bothnia as far S. as the straits called the Quarken. It was formerly divided into E. and W. Bothnia, but the former has been ceded to Russia, and constitutes the greater part of the lately-erected government of Uleaborg.

Western Bothnia constitutes with Lapland the most northern portion of Sweden, and contains about three-eighths of its surface. On the N. E. it is bounded by Russia, from which it is divided by the rivers Muonio-Elf and Tornea-Elf. On the N. and N. W. the range of the Kiölen (pron. Tiölen) mountains separates it from Norway. On the S. it joins the Swedish provinces of Jämtland and Angermanland, and the remainder of its boundary on the S. E. and E. is formed by the Gulf of Bothnia. Its most N. point touches, or passes the sixty-ninth parallel, and the most S. lies nearly at equal distance from the sixty-third and sixty-fourth parallel. It extends from 14° 20' to 24° E. long. Its surface is calculated at 62,543 sq. m., or a little more than half the British islands.

This province contains the greatest plain in Sweden, which occupies the most northern part of it. It is properly speaking an inclined plane, which begins where the boundaries of Sweden, Russia, and Norway meet, and extends towards the S. S. E. to the shores of the gulf. The lowest part of the plain runs along the boundary of Russia, on the banks of the Muonio-Elf and Tornea-Elf. At the foot of the rocky range which divides it from Norway it is about 1300 ft. above the level of the sea, and presents to the eye nearly a level surface covered with swamps and innumerable small lakes; between which a few small hills rise to 300 or 600 ft. The summits of these hills are covered with white reindeer moss, and between the lakes are bushes of dwarf birch. The country then lowers rapidly, and within 20 or 30 m. the birch has already the appearance of a full-grown tree, and soon mingles with the pine (*pinus sylvestris*); lower down grows the fir (*pinus abies*). About half way towards the gulf, and before the Muonio-Elf falls into the Tornea-Elf, the country is less than 400 ft. above the sea, and is covered with forest trees, except along the banks of the rivers, where agriculture has been introduced within a century and has made considerable progress, though the climate only allows the cultivation of barley, oats, and potatoes.

Along both banks of the Upper Tornea-Elf some hills of considerable height rise on the plain. These hills are immense heaps of iron-ore, nearly useless to man on account of their situation.

The Tornea-Elf rises in the lake of Tornea (Tornea-Träsk), which is imbedded in the rocky mountains of the Kiölen, and extends about 36 m. in length, with an average breadth of 10 m., its N. E. extremity being only about 15 m. from the Ocean. From this lake the river runs between the hills of iron-ore, forming numerous rapids and small cataracts, which however would not be an insuperable

obstacle to navigation, were it not for a cataract near its confluence with the Muonio, where the river, in a distance of about 1000 ft., descends 72 ft. in perpendicular height. The Muonio, which through its whole course is the boundary between Russia and Sweden, is called in its upper part Kögämiä, and is navigable for many miles above its mouth, though it has some rapids. Before the Tornea-Elf turns to the E. to unite with the Muonio-Elf, it sends off a branch to the right called the Tärende-Elf, which, after a tortuous course of about 30 m. to the S., joins the Calix-Elf, forming in this way a natural canal between two river systems. The Tornea-Elf runs upwards of 230 m. and falls into the N. part of the Gulf of Bothnia, a few miles below the town of Tornea.

The Calix-Elf rises at no great distance to the S. of Tornea-Träsk in the Kiölen mountains, whence it carries off the waters of four or five large lakes. It descends on the same plain to the S. of the great group of iron hills, and runs nearly parallel to the Tornea-Elf E. S. E. for about half its course. Where it receives the Tärende-Elf it turns to the S. and continues in that direction. It is less rapid than the other large rivers of Bothnia; it reaches the most northern part of the Gulf of Bothnia after a course of nearly 250 m.

The country between the Calix-Elf and the Lulea-Elf forms the southern part of the plain, which may be considered as terminating near the banks of the latter river, where stupendous rocky masses rise, which skirt its banks as far as its confluence with the Lilla (Little) Lulea-Elf. These high rocks are called Norra Ananas. In the middle of the plain between the Calix-Elf and Lulea-Elf, rises Mount Dunduri, about four miles S. of the church of Gellivare, which is never entirely free from snow, and consequently may rise to above 4000 ft. To the N. of it lies another group of iron-hills, less extensive than that on the banks of the Tornea-Elf. These heights divide the plain into two portions different in character. Between it and the Kiölen range the country is covered with swamps, and here and there with reindeer moss; the dwarf-birch is rarely met with. This proves that this portion of the plain rises to about 1800 ft. above the sea. The same description applies partly to the country between Mount Dunduri and Norra Ananas, called Stora Maddus. It is a swamp, extending above 20 m. in every direction. The E. portion of the plain is partly covered with forest-trees, and cultivated along the water-courses, though its soil is rather indifferent, and much inferior to that on the other side of the Calix-Elf, except where it approaches the sea.

The Lulea-Elf is the most rapid of the rivers of Sweden and perhaps of Europe, a rival of the Glommon-Elf in Norway. Rising on the E. declivity of the Kiölen Mountains it soon enters a succession of lakes, situated at different levels and united by short channels, which are generally cataracts of considerable height. Such is its course for about 100 m. when the lakes terminate, but the cataracts continue. Some miles after the river has left the last lake, its waters are narrowed by steep rocks on each side, and rush down 400 ft. in the space of less than 1 m. This most remarkable cataract is called Niumelsaakas (the hare's leap), where the vapours arising from the water are directly condensed and freeze in winter, forming a vault strong enough to afford a passage to hares. (Schubert's *Reisen*, p. 362.) Farther down the river runs between two ranges of high rocks, of which the N., the Norra Ananas, is the highest; and here the first solitary habitation is found about 120 m. from the boundary of Norway. Where the rocks terminate the river unites with the Lilla Lulea (Little Lulea), but even farther down, where some patches of ground are cultivated on its banks, numerous rapids and considerable cataracts render it entirely unfit for navigation, except a few miles from its mouth. It enters the Gulf of Bothnia about 2 m. below the town of Lulea, after a course of 200 m. Its largest tributary, the Lilla Lulea-Elf, which likewise rises in the Kiölen Mountains a little farther S., traverses a succession of seven large lakes, which extend upward of 80 m. W. and E.; and after issuing from them runs above 20 m. before it joins the Lulea-Elf. Its bed lies in a deeper valley; it forms fewer and smaller rapids and cataracts, and its banks are inhabited in several places.

The country between the Lulea-Elf and Skelleftea-Elf is nearly equally divided between mountains and plains. In his part the Kiölen range rises to its greatest height in Mount Sulitelma, and extensive ranges of it are always

covered with snow. The ridges branching off from it E. extend from 60 to 80 m., and are divided by wide valleys, which in their upper parts rise above the line of the birch (2000 ft.), and are only covered with swamps and reindeer moss. In their lower parts forests of pines, fir, and birch are frequent, and the habitations of men soon begin to appear, but the soil is unfit for cultivation, except a few small patches. Even lower down, in the plain itself, the surface is generally covered with swamps, in which a great number of loose stones occur. Along the water-courses the pasture is good, but in very few places can the soil be cultivated with advantage. About 60 m. from the shore, agriculture begins to be the principal occupation of the inhabitants, and villages are more numerous; but even here woods cover the greatest part of the country.

The Pitea-Elf rises in the extensive lake of Peskejaure, which is enclosed by high mountain rocks, and running through the mountainous country in a S.E. direction, traverses many smaller lakes. Here it forms numerous rapids, and some considerable cataracts. In the plain it continues its S.E. course, but about 60 m. from the coast, it turns due E. and falls into the sea a little below the town of Pitea, after a course of about 180 m. It is only navigable a few miles from its mouth.

The Skelleftea-Elf rises in the N.E. declivity of the Nasa-fjäll, in which there are some mines of silver, which since 1808 have not been worked. In the mountainous portion of the country, this river likewise traverses some considerable lakes, and receives the waters of others by narrow channels. So far it runs S.S.E., but in the plain it soon turns to E.S.E., and continues in that direction to its mouth, below the church of Skelleftea. The rapids in this river are more numerous than in the others; but it has fewer cataracts, so that the salmon ascend nearly to its sources. The greatest cataracts are a few miles above the church of Skelleftea, and of course the river is only navigable for a few miles above its mouth. Its course is about 180 m.

On the banks of this river the great plain of Bothnia ceases, the country S. of it being entirely hilly or mountainous, and the level tracts few and of comparatively small extent. The hills cease at a short distance from the shores. Farther inland they rise into mountains, with declivities covered with forests, consisting chiefly of pine, birch, and fir. The level tracts along the rivers afford pasture, and are sometimes cultivated. Agriculture is carried on to a much greater extent in the E. and hilly parts of the country.

In this most S. portion of Bothnia the mountains in the W. districts form ranges, rather than groups. Some miles N of 65° N. lat. a range branches off from the Kiölen chain, which running nearly E. traverses almost the whole of the Scandinavian peninsula, terminating about 30 m. W. of the mouth of the Umea-Elf. This range, called the Stötting-fjäll, approaches the snow-line, and though its summits are formed of barren rocks, the sides are clothed with fir, birch, and aspen, and afford good pasture.

To the N. of this chain runs the Oran-Elf, a considerable river, rising at some distance from the Kiölen and running nearly E., and parallel to the Stötting-fjäll. It turns to the S. E., where this mountain-range terminates, and soon after enters Angermanland, where it still runs from 40 to 45 m., till it falls into the sea between the villages of Angersjö and Lefvar. Its whole course may be upwards of 150 m.

To the N. of the Oran-Elf runs the Umea-Elf, which rises in the Kiölen-range about 66° N. lat. It first runs S., traversing some lakes, and then turns to the S.E. and flows into the large lake of Stora Umea. It continues in the same direction till about 20 m. from the sea it is joined by the Windol-Elf, and falls into the gulf after a course of about 180 m. The Windol-Elf which rises in the Kiölen range, about 66° 30', on the S. declivity of the Nasa-fjäll, and descends in a S.E. direction with numerous bendings, is more free from cataracts than the other rivers of Bothnia, and the Swedish government has in later times succeeded in rendering a considerable part of it navigable, at least so far that timber and wood may be floated down.

Bothnia, extending on both sides of the polar circle, has, of course, a very cold climate, though it is much milder than other parts of the globe in the same latitude. Winter lasts, in general, eight months, from the beginning of October to the end of May, and the cold is very severe. It is followed

almost immediately by summer, a few moderate days only intervening between the frost and a great degree of heat. In the beginning of June all traces of winter have disappeared, and the grain is sown. The great heat produced by the long days of 18 or 20 hours, united to the moisture which has accumulated during the long winter, give rise to a very rapid vegetation. Corn is sown and reaped in some places in the course of seven or eight weeks, and nowhere remains in the ground more than ten weeks. Nevertheless it is sometimes destroyed by night frost, which generally appears about the 20th of August for three or four nights in succession. These nights are called *tram nights*, and are followed by about six weeks of moderate warmth.

The quantity of snow which falls during the winter is very great; but in summer rain is scarce: which circumstance would be very injurious to the growth of grass, were it not for the inundations of the rivers. The rivers of Bothnia overflow the low tracts along their banks twice a year; the first time in the beginning of June, after the melting of the snow in the lower parts of the country; the second towards the middle of July, when a succession of long days has produced the same effect on the mountains. The latter inundation is more favourable to the growth of grass than the former, and enables the inhabitants to maintain a much larger stock of cattle during the eight winter months.

The soil is of an indifferent quality, sandy and stony, except along the Tornea-Elf and Muonio-Elf, where it is rather good, especially towards the shores of the gulf. The worst portion is that along both sides of the Lulea-Elf, and the high valleys along the foot of the Kiölen. Along the shores of the gulf of Bothnia the land is much better, and the crops sufficient for the consumption of the inhabitants; but as that is not the case with the more inland districts, a certain quantity of corn is annually imported from Finland.

Wheat is only cultivated at one place, in the most S. corner of the province, and here hardly a few bushels are annually obtained. Rye is grown nearly up to 66° N. lat., and oats and barley even to 68°. Potatoes, which have been introduced only in the last forty or fifty years, succeed in most places very well; turnips and cabbages do not thrive.

Black cattle form one of the principal sources of wealth in the provinces, but the stock is limited by the scarcity of meadows; pasture-walks however are so extensive, that ten times the present number of cattle could easily be maintained in summer. Butter and hides, which are the principal articles of export, are sent to Stockholm. Horses are rather numerous, and of a middling size. Sheep are only found in the S. districts, and their wool is coarse. Hogs are not kept. The Laplanders have considerable herds of rein-deer, and live upon their flesh and other produce.

The inhabitants of the more inland districts gain their living chiefly by fishing in the lakes, which abound in many kinds of fish, as pike, tench, trout, but especially the *salmo lavaretus*. The salmon ascends those rivers which have not high cataracts, and the number of fish taken is considerable.

The greatest part of the country is still covered with forests. Only the high plain between the Calix-Elf and Lulea-Elf rises above the line of the birch trees. This district and the upper parts of the mountains, with the higher valleys, are only covered with reindeer moss; the remainder forms nearly an interminable forest, especially in the inland country. The most common trees are birch, pine, fir, alder, and aspen. The birch grows to a state of tree on the banks of the Tornea-Elf. But it is observed that the growth of the trees is very slow, probably on account of the length of the winter. The inhabitants have hitherto derived very little advantage from this vast treasure, the rivers not being navigable even for floating down wood. In some parts along the coast tar and pitch are made for exportation, but in no great quantity.

Three nations inhabit Bothnia, the Finlanders, the Laplanders, and the Swedes. The Finlanders have settlements chiefly along the banks of the Muonio-Elf and Tornea-Elf, where they form the bulk of the population. They apply themselves especially to the rearing of cattle, and are distinguished by their skill in the management of the dairy. The Laplanders inhabit the inland district, and conduct the herds of reindeer in the summer to the upper valleys in the mountains, and even to Norway, but in winter they descend to the lower plains on the shores. Some of them have in-

come agriculturists, and partly adopted the manners and customs of the Swedes. The Swedes occupy the country along the shores, and extend always farther up into the valleys along the larger rivers. They occupy themselves nearly exclusively with agriculture, except a few families in the inland districts, who gain their sustenance by fishing in the lakes.

Bothnia with Lapland is politically divided into two läns or districts, of which the S. is called *WÄSTERBOTTEN*, or Umea Län, and the N. *NÖRRBOTTEN*, or Pitea Län. (Buch's *Travels*; Schubert's *Travels in Sweden*; *Maps of Baron Hermelin*.)

BOTHNIA (the Gulf of), the most northern part of the Baltic Sea, extends from 60° to nearly 66° N. lat.. Between 60° and 64° it lies due S. and N., but the remainder declines to the N.E. Its whole length may be nearly 450 m.

Its entrance is formed by a strait called *Alands Haf*, which divides the Scandinavian pen. from the *Aland Islands*, that belong to the Russian government of *Abo*, a part of the ancient prov. of Finland. This strait is from 36 to 50 m. wide. North of it the gulf widens suddenly, the coasts of Sweden trending to the N.W., so that before it reaches 61° it has attained a width of upwards of 240 m.; which breadth it preserves nearly to 62°. Farther N. it narrows gradually, till near 64° it forms another strait, called the *Quarken*. That portion of the gulf extending from *Alands Haf* to the *Quarken* is called *Bottniska Haffet* (the sea of Bothnia). At the *Quarken* the coast of Sweden is hardly more than 60 m. from that of Russia, but the straits are still farther narrowed by the Swedish island *Holmoe* and the Russian islands *Walloe*, so that the free passage is only about 25 m. wide. To the N. of the *Quarken* the gulf preserves a width of from 50 to 60 m. for some distance, but it afterwards widens to 100 and even 120 m., which breadth continues to its northern termination. The portion of it N. of the *Quarken* is properly called *Bottniska Wicken* (the gulf of Bothnia).

The coasts S. of the *Quarken* are rocky though not high on both sides of the gulf, but in general higher on the western side, where at a few places they rise to 60 ft. and upwards. To the N. of the *Quarken* the coasts are low and sandy, with the exception of a tract near the straits on the Russian side, where they are rocky but likewise low. The largest part of the coasts of this northern portion is formed by an alluvial deposit brought down by numerous rivers.

Under **BALTIC** (p. 347) is noticed the small degree of saltiness of the waters of that sea, and of the gulf of Bothnia in particular; and also that the surface of the latter is frequently covered with ice, so that it is possible to pass over it from the town of *Wasa* in Russia to *Umea* in Sweden. The most remarkable instance in modern times was the passing of a corps of the Russian army under the command of *Barclay de Tolly* in the last war (1809). It was effected in the month of March; the soldiers were obliged to pass two nights on rocky islands and on the ice, and reached *Umea* the third evening.

There is no want of good harbours in the gulf; but the navigation is interrupted by the ice for five months to the S. of the *Quarken*, and for six to the N. of it. The latter portion of the gulf is very rarely visited by foreign vessels; the produce of the adjacent countries being brought in the small coasting vessels of the country to *Stockholm* and the larger towns of Finland. The southern part of the gulf is however annually navigated by some English vessels, which export timber and naval stores. Swedish and Norwegian vessels also bring these articles to England. Fish is not abundant, with the exception of a kind of small herrings, called by the Swedes *strömmings*, which appear in summer in great numbers on the W. coast of the gulf, especially S. of the *Quarken*, when nearly all the inhabitants of the coast S. and N. of *Hernösand* are occupied in catching them. The greater part are dried, but a considerable portion undergo a fermentation in a closed cask, after having previously been a little salted, and exposed to the air for a short time. The first thus acquires a sour taste, and is called *sursströmming*. Both the dried and sour *strömmings* are exported to the neighbouring countries, and are used by the lower classes in a great part of Sweden.

BOTHWELL, JAMES HEPBURN, EARL OF, was the only son of *Patrick*, third earl of *Bothwell*, of the *Hepburn* family. His mother, *Agnes*, daughter of *Henry Lord Sinclair*, by a daughter of *Patrick Hepburn*, first earl of *Bothwell*, lived many years in a state of divorce from her

husband, but for what reason is not certainly known. *Earl Patrick* was notoriously profligate in his public character. He died in September, 1556, at the age of 51; when his son *James* succeeded to his honours, offices, and estates. The offices which he transmitted were those of *Great Admiral of Scotland*, *Sheriffs of the Shores of Berwick, Edinburgh, and Haddington*, and *Baillie of Lauderdale*, all which he had himself inherited. The *Hepburns* were originally mere tenants of the earl of *March*; but in a short time they coped with their potent chief, and, on his forfeiture in the fifteenth century, they rose to be immediate tenants of the crown, and shortly afterwards the head of the house was made a lord of parliament. The affluence and power of the family reached its height in the time of *Patrick Hepburn*, second *Lord Hales*, who received from the crown, among other grants, the lands and lordships of *Bothwell* and *Crichton*, which were thereupon erected into an earldom. The lands of the lordship of *Bothwell* however were hardly in his possession, when, at the king's command, they were transferred to the earl of *Angus*, in exchange for the turbulent border country of *Liddesdale*, the king then saying there was no order to be had with the earls of *Angus* so long as they kept *Liddesdale*. The second earl of *Bothwell* succeeded to his father's titles, heritable offices, and vast estates in the several counties of *Edinburgh, Haddington, Roxburgh, Dumfries, Kirkcudbright, and Lanark*, which, on his fall at the fatal field of *Flodden*, passed to the father of *Earl James*, who, notwithstanding the misconduct of his parent, was by descent the most powerful noble of the south of *Scotland*, and had the castles of *Hermitage, in Liddesdale; Hales, in the shire of Haddington; and Crichton, in the shire of Edinburgh*. These fortresses are now mouldering into dust, and the surrounding country is rich with the peaceful labours of the plough. In the times we speak of, the fortresses were furnished for a feud, and the adjacent country was scoured by predatory bands. The church and a few great lay proprietors mutually rivalled and despoiled each other, and a series of regal minorities allowed them all to attack and despoil the crown. It had also become the policy of the English kings to hire a secret party in *Scotland* to divide the nation; and in the year immediately preceding *Earl James' succession* to the *Bothwell* estates, the Scottish reformer *Knox* had begun to denounce in the capital the errors of the established faith and the baneful spirit of its ecclesiastics.

Till his father's death, *Earl James* remained, as it seems, abroad, probably with his father, who, after allying himself with *Edward, king of England*, against his sovereign, fled into foreign parts; but immediately on his father's decease, *Bothwell* entered on the busy stage of public life, being then about 30 years of age. He was served heir to his father on the 3rd of *November, 1556*, and he attended the parliament of *December, 1557*, when a commission of the estates of the realm was appointed for negotiating the marriage of the infant queen of *Scots* with the dauphin of *France*. In the parliament of *November, 1558*, he was named one of the lords of the articles; soon afterwards, we find him as lieutenant of the borders meeting, with the earl of *Northumberland*, the English lieutenant, to adjust some border differences; on the 30th *October, 1559*, he is found, under the orders of the queen regent, intercepting *Cockburn, of Ormiston, near Haddington*, when that baron was bringing supplies from *England* to the party of the reformation; and the following month, when the reformers retreated before the regent's forces, he proclaimed the earl of *Arran*, one of the reform leaders, a traitor to the government. Next year the queen regent died, and soon afterwards the presbyterian form of protestantism was formally established, the reform leaders or lords of the congregation taking the reins of administration. In the end of the same year, *Francis II. of France*, died; and in contemplation of *Mary* his widowed queen's return to *Scotland*, several nobles of the protestant party were despatched to *France* with a tender of their services. In this company we find *Bothwell*, who, with all his father's suppleness, had changed with the times and acceded to the congregation. *Mary*, then scarce 20 years old, landed at *Leith* on the 19th *August, 1561*; and in forming her government, she set her bastard brother, *Lord James Stewart*, a protestant, at the head of the administration, and made *Bothwell*, whose sister *Lord James* had recently married, one of her privy council; the other members of the government and chief officers of state being also protestants. The government however of which *Bothwell*

was thus a part, was frequently disturbed by his violence, his contests with the earl of Arran, his brother-in-law, and his outrages on individuals. For his misconduct he was, in December, 1561, summoned to court, and then ordered to quit Edinburgh till the 8th of the following month. In March, 1562, he endeavoured to get Arran, to whom he had become reconciled, to conspire with him in seizing the queen at Falkland, in her progress to the north, in order to put her brother in possession of the forfeited earldom of Murray; and detaining her in captivity till she should acquiesce in their measures. But Arran having revealed the matter, he and Bothwell were both committed to Edinburgh castle, whence however Bothwell escaped; and after fortifying himself awhile in his own retreat at Hermitage, got to sea, but was taken again at Holy Island. Randolph pressed his detention much, representing him as the 'determined enemy of England, despicable out of measure, false and untrue as a devil.' Notwithstanding he got to France; but soon afterwards he returned to Scotland again. 'The queen,' (Mary), says Randolph, in one of his despatches to Cecil at this time, 'mislaketh Bothwell's coming home, and hath summoned him to undergo the law or be proclaimed a rebel. He is charged to have spoken dishonourably of the queen, and to have threatened to kill Murray and Lethington.' The dishonour here alluded to was probably the same as that mentioned in another despatch to Cecil of date 30th March, where he says 'Bothwell hath grievously offended the queen of Scots by words spoken against the English queen, and also against herself, calling her the cardinal's (Beaton) whore: she hath sworn unto me upon her honour that he shall never receive favour at her hands.' The following month we find a despatch from Bedford to Cecil, in which Bothwell is represented as addicted to vice and unnatural crime; and, about the same time, Bedford writes to the same minister that Bothwell 'hath been in divers places, at Haddington, with his mother, and elsewhere, and findeth no safety any where. Murray followeth him so earnestly, as he hath said *Scotland shall not hold us both*.' By the queen's directions, he was, for his treasonable conspiracy of March, 1562, indicted before the lord justiciar on the 2nd of May. On that occasion, the earl of Argyll, the justiciary, and the earl of Murray, came to Edinburgh at the head of 5000 men, to hold a justice court; but Bothwell had embarked at North Berwick for foreign parts, and not appearing at the trial, was outlawed.

In this depth of debasement however Bothwell watched every opportunity to spring again into royal favour; and when the queen married her cousin Darnley, he returned to Scotland. In the beginning of October of the same year we find him one of the new privy councillors, and a leader of the royal army against Murray, Arran, and others who opposed the match; and on the 31st of the same month Randolph writes to Cecil, 'My Lord Bothwell, for his great virtue, doth now all, next to the Earl of Athol.' The following spring, Bothwell, then at the age of 41, married Lady Jane Gordon, sister of the Earl of Huntley, whose father had been Lord Chancellor of Scotland. In the murder of Rizzio, the queen's secretary, at the instigation of the jealous Darnley, Bothwell stood by the queen and was opposed to the enterprise; and the following night we find him among other nobles attending the royal pair within the castle of Dunbar in his shire of Haddington, whither the queen persuaded Darnley to flee with her, and of which fort Bothwell had the custody. The king and queen soon afterwards returned in a sort of triumph to Edinburgh and proceeded to the castle, where she immediately sent for Argyll and Murray, and had them reconciled to Huntley, Bothwell, and Athol. But Bothwell had only obtained the apparent friendship of the nobility. In a letter from Alnwick, of date 3rd of April, 1566, it is stated that one of Bothwell's servants confessed that he and four more of his fellow-servants had been engaged by Lethington to murder Bothwell, the other servants on their examination making the like confession; and on the 2nd August, 1566, Bedford wrote to Cecil that 'the Lords Maxwell and Bothwell are now enemies. Bothwell is generally hated, and is more insolent than even David Rizzio was.' With the sovereign however Bothwell was, as Bedford afterwards writes to Cecil, 'in favour, and has a great hand in the management of affairs.' He attended the king when he went to Tweeddale in August, 1566, to enjoy the amusement of the chase; he returned with him to Edinburgh, where we find him in the council held in September of the above year, and also in the great

council which voted a supply of 12,000*l*. for defraying the expense of the infant prince's baptism; and from Edinburgh he proceeded with the royal party to Stirling to see the Prince. It being afterwards determined that the queen should hold a justice ayre on the borders, Bothwell was dispatched, as lieutenant ayre of the marches, to Leddesdale, the chief seat of outrage. But the people of that district had been gained to the English interest, and when Bothwell arrived he was attacked and severely wounded. On the 10th of October, 1566, he was, says Birrel, 'deidly wounded by James Ellete, alias John of the Park, whose head was sent to Edinburgh thereafter.' The queen, on hearing of the injury Bothwell had sustained, immediately rode off from Edinburgh, where she then was, to Hermitage castle, a distance of about 40 miles, through a rugged country, to visit him and returned to Jedburgh the same day—a journey wrought from the anxiety and exertions attendant on it, brought on a violent fever that threatened her life. She became, says Birrel 'deidly sick, and desired the bells to be rung, and the people to resort to the kirk to pray for her.' Bothwell was also, on the same occasion, conveyed to Jedburgh, where the queen lay; and as the Bishop of Ross wrote from Jedburgh on the 27th October, 1566, to Archbishop Beaton at Paris, 'My Lord Bothwell is here, who convalesces well of his wounds,' so the queen also gradually recovered with him. She now made a tour through the Merse, and arrived at Craigmillar castle near Edinburgh, where she remained till her removal to Stirling to attend the baptism of her son. While at Craigmillar, the project of her divorce from Darnley was opened to her, but she declined the proposal, fearing her own reputation and her son's succession. Bothwell, to quiet her fears on the latter point, quoted his case, as having succeeded to his paternal estates notwithstanding a subsisting divorce between his parents. But the queen appearing to dislike it, the subject was not pressed. When at Stirling, on occasion of the prince's baptism, she agreed to restore Morton and the other members of Rizzio, and on the 25th December, 1566, their pardon was signed. The following month Bedford wrote to Cecil, 'the Earl of Morton, having now obtained his pardon, doth think himself much beholden to you for your favour and good-will therein. There were some that thought to be the same, but his friends stuck so to it on his behalf, that it prevailed therein. In the which, the Earl of Bothwell, a very friend, joined with my Lord of Murray, the Earl of Athol and others.' It is likely that an ambition to please the queen had already filled the mind of Bothwell, and having failed in obtaining a divorce he had perceived Morton to be a fit instrument for his purpose. On the 10th of December, 1566, Darnley went to visit his father at Glasgow, where he was soon laid up with small-pox. On the 20th of next month Mary went to visit him, and on the 23rd the king and queen came to Edinburgh, where the king was conveyed to lodgings in the kirk of Field. During the whole of January Bothwell was in intercourse with Morton and others, to whom he said 'it was the king's mind that the king should be taken away.' The queen spent the evening of the 9th February in Darnley's sick-chamber, and at 12 o'clock she left him for a masque, having kissed him and put one of her rings on his finger. A few hours after, the house where Darnley lay was blown up, and his servant destroyed in the explosion. The public voice was unanimous in declaring Bothwell accessory to the murder, and placards were put up on the streets accusing him of the crime; but though he continued in Edinburgh, no steps were taken against him till the 28th March, when Lennox, the father of Darnley, avowing himself his accuser, the privy council directed him and others to be indicted for the murder. Three days before the trial Murray set out for France without any known business; and at the trial Bothwell stood and was acquitted; but when the mode in which the trials were at that time conducted in Scotland is considered, his acquittal will be held as really immaterial in determining the question of his innocence or guilt. Two days afterwards the parliament assembled at Edinburgh and Bothwell was one of the commissioners who met the estates. He also carried the sword of state before the queen when she came to the parliament in person; and in the same parliament he was chosen one of the lords of the articles. On the last day of the parliament various ratifications were passed in favour of different persons. The Earl of Murray, then absent, obtained a ratification of his lands and earldom; Morton got a ratification of his lands with those of Argyll.

a. Body triply divided.

GENUS POLYCLINUM (Savigny).

Of this section the violet Botryllus (*Botryllus violaceus*) is an example.

b. Body entire; disposition in many concentric circles.

GENUS POLYCYCLUS (Lamarck).

Of this section Renier's Botryllus (*Botryllus Renierii*) is an example.

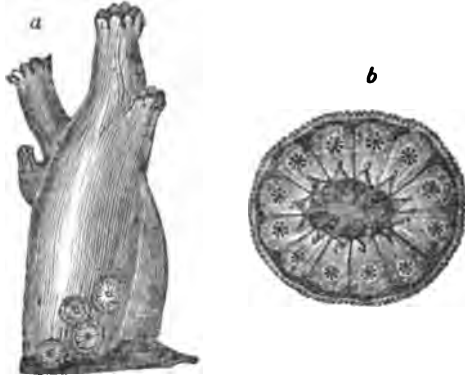
* * *

Body entire; disposition radiating; eight tentacula, the four smallest of which are at the external orifice.

GENUS BOTRYLLUS (Lamarck).

Of this division the stellated Botryllus (*Botryllus stellatus*) is an example.

The species are European.



[*Botryllus stellatus*.]

a, a group of *Botryllus stellatus* upon *Ascidia intestinalis*; b, a disk magnified.

BOTRYOLITE. [DATHOLITE.]

BOTRY'TIS, one of the obscure parasitical genera of fungi, to which what is called *mildew* is often attributable. The plants consist of little cells adhering end to end; of these a part lies prostrate on the surface of the plant that bears them, the other rises erect from the surface and bears a collection of roundish seed-cases at the extremity. From the spores contained in these cases the plants are propagated, and seeing that their size is so microscopic in all cases as to escape our vision unaided by glasses, and that what seems to the naked eye a thin brownish white patch upon a leaf is in reality a dense forest of such plants, their power of dissemination must be very great. They attack the fibres of vegetable fabrics, such as linen and cotton when placed in damp places, and the decayed stems of various plants, decaying apples, pears, grapes, &c. &c. They are always superficial and never intestinal.

BOTS are the larvæ or caterpillars of the gad-fly, belonging to the order *Diptera* and the genus *Æstrus*, and distinguished by this peculiarity, that they pass the larval state of their existence within some living animal, and feed on the juices or substance of that animal. There are numerous species of them. Every quadruped on which they prey has its peculiar fly. The notice of a few of those most commonly known will suffice.

The *Æstrus equi*, or gad-fly of the horse, belongs to the species (the genus of some entomologists) *Gasterophilus*, so called from its larvæ inhabiting the stomach of that animal. It is distinguished from the other *Æstri* by the smoothness of the thorax, and by the eyes in both sexes being equidistant from each other, not quite half an inch in length, with gauze-like yellow and brown wings, its chest of a rusty colour approaching to a brown hue on the sides and with a yellow tinge posteriorly, its belly of a reddish brown superiorly and a dirty grey beneath, with its extremity almost black; the whole insect is thickly covered with down. The gad-fly is seen in the latter part of the summer very busy about horses: this is the impregnated female depositing her eggs. She approaches the horse, selects some part which he can reach with his tongue, and which he is in the frequent habit of licking; she balances herself for a moment, and then, suddenly darting down, deposits an egg on one of the hairs, which adheres by a glutinous substance that surrounds it. She continues her labour with wonderful perseverance until she has parted

with fifty or a hundred eggs, and then having exhausted herself, she slowly flies away, or drops at once and dies.

If a horse at grass is carefully examined in August, some hundreds of these minute eggs will be found about its legs and the back part of the shoulder, and few or none out of the reach of his tongue. In two or three days these eggs are sufficiently matured to be hatched. Possibly the horse feels a little inconvenience from all this glutinous matter sticking about and stiffening the hair, and he licks the part, and by the pressure of the tongue, and the mingled influence of the warmth and moisture of it, the ova are burst, and a small worm escapes from each. It clings to the tongue, and is thus conveyed into the mouth; thence it is either carried with the food into the stomach, or, impelled by instinct, it travels down the gullet, being of too tiny size to inconvenience or annoy the horse. Thus it reaches the stomach, and, by means of a hook on each side of its mouth, affixes itself to the cuticular or insensible coat of that viscus. It scoops out a little hole, into which its muzzle is plunged, and there it remains until the early part of the summer of the following year, feeding on the mucous or other matter which the coats of the stomach afford. It has now become an inch in length and of corresponding bulk, and ready to undergo its change of form. It detaches itself from the cuticular coat to which it had adhered, and plunges into the food which the other and digestive portion of the stomach contains; it passes with the food through the whole length of the intestines, and is discharged with the dung. Sometimes it is not perfectly enveloped in the fecal mass, it then clings to the sides of the anus, and hangs there firmly until there is a soft place beneath on which it may drop; it then hastens to burrow into the earth, and, if it has escaped the birds that are eagerly watching for it, it has no sooner hollowed for itself a convenient habitation than a shelly covering is formed around it, and it appears in the state of a pupa or chrysalis.

It here lies torpid for a few weeks preparing to undergo its last change. It assumes the form of a perfect fly; it then bursts from its prison, rises in the air, and seeks its mate. The work of fecundation being accomplished, the male immediately dies: the female lingers a day or two in order to find the proper deposit for her eggs, and her short life also terminates.

It is in the larva or caterpillar state that the bot is most known. The stomach of the horse sometimes contains an almost incredible number of them, the cuticular portion of that organ being in a manner covered with them. In a few instances they have been decidedly injurious; having mistaken the upper part of the windpipe for their residence, and, fastening themselves on the edges of the opening into it, have produced a cough which no medicine could alleviate, and which increased with the growth of the bot, until a degree of irritation was excited under which the animal sunk. They have also travelled farther than the stomach, and have irritated and choked the first intestine, and thus destroyed the horse; and, even in their natural habitation, under probably some diseased state of the stomach arising from other causes, they have perforated it and caused death.

These however are rare occurrences; they are exceptions to a general rule. The plain matter of fact is, that a horse that has been turned out in July and August, and therefore almost necessarily has bots, enjoys just as good health as another that has been stabled during this period. He is in as good condition, and as fully capable of work when the cuticular coat is crowded with full-formed bots as he is at any other time; and his health is unaffected when they are passing through the intestines to seek a new habitation.

Some persons have maintained that their presence in the stomach is beneficial. It has been said that, by their constant action on it, in the suction of their food, they rouse it to the full exercise of its digestive powers. It is forgotten however that their habitation is not the digestive portion of the stomach. They have been said to assist in the hard and irregular surface which they present, in the trituration of the food; but the function discharged by that portion of the stomach on which they are found is simply one of maceration. There is no necessity for supposing that their presence is beneficial to the horse. The truth is, that insects find here a secure and comfortable abode during their larval state, without, generally speaking, producing any other inconvenience to the horse than the temporary irritation which they occasionally excite when making their escape.

The horse-owner therefore will care very little about them. He will remove them when they are hanging around the anus; but he will never have recourse to physic on their account, because it is rare indeed that they do any harm, and, if they did, their muzzles are buried so deeply in the cuticular coat that no medicine that is safe to administer can possibly have any effect upon them.

A smaller species of bot, called from its colour the *red-bot*, is occasionally found in the stomach; but the fly from which it proceeds has never been accurately described. There is no ground for the assertion that the red-bot is more injurious than the common bot.

A third species, the *Æstrus hemorrhoidalis*, or fundament-bot, is better known. The fly is considerably smaller than the common *Æstrus equi*; it is of a brown colour, with the extremity of the body rounded and yellow, and the mouth is furnished with exceedingly sharp pincers. This fly may be seen darting between the thighs of the horse and around its croup, and following the motions of the tail until the animal is preparing to dung. During the evacuation of the dung, and the subsequent protrusion of the intestine, it darts upon and tears the gut with its pincers, and deposits an egg in every wound. The horse does not seem to suffer any pain during this operation, for he stands passive; and the little worm, soon produced from the egg, establishes its abode in the place in which it was deposited. It likewise remains its stated time in the intestine, and escapes at the same time that the common bot does from the stomach. These bots are often seen within the verge of the anus, and occasionally seem to be productive of a slight degree of irritation. They are smaller than the common bot, and distinguished from the red-bot by their colour. An injection of linseed-oil will generally dislodge them.*

The *Æstrus ovis*, or *Æstrus* of the sheep, is a more formidable insect. It is smaller than the *Æstrus* of the horse: its body is of a dark-brown colour, spotted with white, the white sometimes so much prevailing as to give a greyish hue to the fly. It may often be seen in copses, and particularly on rails in the neighbourhood of a copse. Every shepherd ought to make himself acquainted with it, for it may then be easily crushed and destroyed. It prevails most in June and July, and is sometimes an intolerable nuisance in woody countries. If only one of them appears the whole flock is struck with terror; and if there is any place in the field devoid of pasture the sheep crowd to it, turning their heads towards the centre of the group, with their muzzles to the sand, and their feet in continual motion in order to secure themselves from the attack of their foe. The *Æstrus* endeavours to get at the inner margin of the nostril, and, darting upon it with the quickness of lightning, deposits her egg. The warmth and moisture of the part speedily hatch it, and the little worm escapes. It crawls up the nostril, it threads all the sinuosities of the passage, and finds its way to some of the sinuses connected with the nose. The irritation which it occasions as it travels up the nose seems to be exceedingly great. The poor animal gallops furiously about, snorting violently, and almost maddened by the annoyance. At length the worm reaches some of the convolutions of the turbinated bones of the nose, or the antrum or cavity of the upper jaw, or the frontal sinuses, it fastens itself on the membrane by the two hooks with which, like the others, it is provided, and there it remains until April or May in the succeeding year.

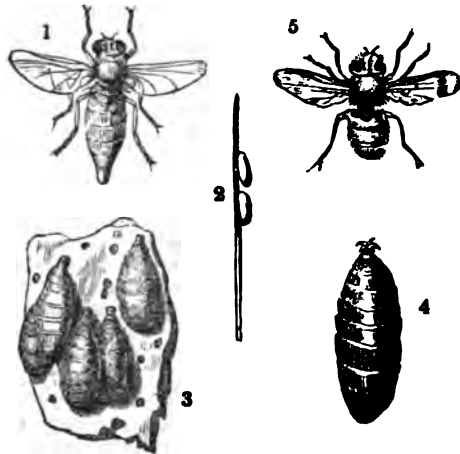
There are seldom more than three or four of these bots in each sheep; and when they have reached their appointed home, like the bots in the stomach of the horse, they are harmless. Some strange but groundless stories have been told of gleet from the nose, giddiness, and inflammation of the brain having been produced by them.

The larva or bot remains in the sinus until it has fully grown. It then detaches itself from the membrane, creeps out the same way by which it entered, and again sadly annoys the animal for a little while, the sheep making the most violent efforts to sneeze it out. At length the grub being dropped, burrows in the earth, becomes an oval and motionless chrysalis, and, six weeks or two months afterwards it breaks from its prison a perfect fly. The work of propagation being effected, the male, like that of the *Æstrus equi*, dies; the female lingers on a little while

* Both the red-bot and the hemorrhoidalis belong to the species *gastrophilus*; and to the larvae of these three the term *bot* has been by many authors restricted: but as the larvae of all the *æstri* pass this portion of their existence within some living animal, it seems natural to extend the term to them all.

until she has safely deposited her ova; she takes no food, for she has no organs to receive or digest it; she accomplishes her task and expires.

The *Æstrus bovis*, or gad-fly of the ox, is larger than either of the others. Its chest is dark-brown, with a yellow patch on the back, and the rounded abdomen has alternate rings of a brown and orange colour. The fatty and cellular substance beneath the skin of the ox is the residence of its larvæ. The fly almost uniformly selects a young beast in good condition, and alighting on the back, a little on one side of the spine, it punctures the skin and drops one of its eggs into the perforation, and with it, probably, some acrid fluid which causes temporary but intense pain. The ox darts away, and runs bellowing over the field with his head protruded and his tail extended. His companions, smarting from the same pain, or dreading a similar attack, also gallop wildly in every direction, hastening, if it be in their power, to some pond or stream, where their enemy is afraid to follow them*. A small tumour, a *warble*, presently appears on the back, which being carefully examined is found to contain a little white worm. This worm grows and assumes a darker colour, and becomes a perfect bot; and there it remains, abundantly nourished by the fatty matter around it, until the following June, when it begins to eat its way through the wall of its cell. Many a bird, aware from the uneasiness of the beast of what is going forward, is ready to seize the bot as it is forcing itself through the aperture which it has made; and the cattle too, instinctively crowd to the water in order that the intruder may fall into the stream and thus be lost. In one of these ways the great majority of the larvæ perish; but a few reach the ground, speedily burrow into it, pass through their chrysaline state, and re-appear in August in their last and perfect form. They also immediately set to work to secure the perpetuation of their species, regardless of the annoyance to the animals within whose frame they find a refuge.



1. The female of the *Æstrus equi* nearly double its natural size.
2. The eggs, also magnified, deposited on and adhering to the hair.
3. The bots—one-half of their natural size—adhering by their tentacula, or hooked mouths, to the cuticular portion of the stomach. Some of them are supposed to be recently detached, and the excavations which they had made in the cuticular coat are seen.
4. The full-grown bot detached.
5. The *Æstrus ovis*, or gad-fly of the sheep.

The farmer does not pay the attention which he ought to these warbles. It is true that the cattle, when the tumour has once formed, do not appear to suffer any inconvenience from its existence; and the farmer is accustomed to associate with the appearance of a few warbles the certainty of the thriving condition of the beasts; but he forgets the pain and terror which the animal has already suffered, and that which he has yet to undergo; and he also forgets the deterioration of the hide. The hole made by the bot in his escape will apparently close, but not until after a considerable period has elapsed, and never with a substance so firm and durable as the first. It is easy to destroy the creature in its cell. The pressure of the finger and thumb will effect it, and while the beast will escape considerable annoyance, the hide will not be damaged.

The goat and the different species of deer, and, in fact,

* It is probably this fly, or some one like it, that Virgil (*Georgic*, iii. 146) describes as driving the cattle mad in the south of Italy.

almost all animals, have their peculiar tormentors, but the distinctions and habits of these varieties of the *Cestrus* are not well known.

BOTTA'RI, GIOV'ANNI, was born at Florence in 1689, studied Latin and belles lettres under the learned Biscioni, and Greek under Salvini, and afterwards philosophy, mathematics, and theology, in which last he took his doctor's degree in 1716 in the University of Florence. The Academy of La Crusca made him one of its members, and entrusted him with the task of preparing a new edition of its great vocabulary, in company with Andrea Alamanni, and Rosso Martini. This laborious work lasted several years, and the new edition was published in 1738, in 6 vols. fol. Bottari was also made superintendent of the grand ducal printing establishment at Florence, where he published new editions of several Tuscan writers with notes and comments, such as Varchi's Ercolano, the works of Sacchetti, of Frà Guittone d'Arezzo, &c. In 1729, he wrote *Lezioni tré Sopra il tremuoto* on the occasion of an earthquake which occurred at Florence in that year. In 1730 he went to Rome, where he fixed his residence. Clement XII. gave him a canonry, and also the chair of ecclesiastical history in the University of La Sapienza, and employed him in 1732 together with Eustachio Manfredi, on a survey of the Tiber throughout Umbria, in order to ascertain whether it could be rendered navigable. The result of this survey was published: 'Relazione della visita del fiume Tevere da Ponte Nuovo sotto Perugia fino alla foce della Nera.' Bottari made a similar survey of the Teverone. His next publication was a learned work on the monuments found in the numerous and vast subterraneous vaults near Rome, commonly known by the name of catacombs: 'Sculture e pitture sacre estratte dai cimiterj di Roma, pubblicate già dagli autori della Roma Sotterranea, ed ora nuovamente date in luce colla spiegazione ed indici,' 3 vol. fol. Rome, 1737-54. He used the plates of the Roma Sotterranea of Bosio, which Clement XII. had purchased; but the letter-press may be said to be entirely Bottari's. He also published 'Storia dei SS. Barlaam e Giosafatte ridotta alla sua antica purità di favella coll'ajuto degli antichi testi a penna con prefazione,' 4to. 1734. Clement XII. being pleased with his exertions, bestowed on him several preferments, made him a prelate of the Pontifical Court, and librarian of the Vatican. Benedict XIV., who succeeded Clement in 1740, made Bottari take up his abode near him in the Pontifical Palace. 'Here I am,' Bottari wrote soon after to a friend at Brescia, 'because his Holiness would have it so, and here I shall remain, without however expecting or demanding, wishing or deserving any further promotion, which would not be of any use either for my body or my soul.' And in fact he rose no farther in the career of ecclesiastical dignities. He published, in 1741, 'Del Museo Capitolino, tomo i. contenente le immagini d'uomini illustri, fol.; and afterwards 'Musei Capitolini tomus secundus, Augustorum et Augustarum hermas continens, cum Observationibus,' fol. 1750. Also 'Antiquissimi Virgiliani Codicis fragmenta et picturæ ex Vaticana Bibliotheca ad prisca imaginum formas a Petro S. Bartoli incisæ,' 1741, fol. Bottari contributed to this work an important preface, with a disquisition on the age of two MSS. of Virgil in the Vatican, and notes, variantes, &c. 'Descrizione del palazzo Apostolico Vaticano, opera postuma di Agostino Taja, rivista e accresciuta Roma, 1750.' Taja had begun this work, which Bottari recast and completed. Bottari died at Rome in June 1775, at the age of 86. He was one of the most distinguished scholars at the Roman Court in the 18th century. Among his minor works are, Dissertations on the origin of the invention of Dante's poem; two Lectures upon Boccaccio, in which Bottari refutes the charge of infidelity brought against that writer; two Lectures on Livy, defending the Roman historian against the charge of too great credulity in narrating prodigies; Letters on the fine arts, Dialogues on the same subject, &c. (Grazzini *elogio di Monsignor Bottari*; Mazzuchelli *Scrittori d'Italia*.)

BOTTLES, GLASS, in common with other descriptions of glass wares, were first subjected to a duty by the 6 and 7 Will. and Mary, but the duty then imposed, after undergoing various modifications, was repealed four years after, by an act, the preamble of which recited that it was 'found by experience that the duties on glass and glass-wares are very vexatious and troublesome in the levying and collecting the same, and of small advantage to the Crown, and should the same be continued would lessen the duty on coals much

more than the said duties on glass-ware would amount to would hinder the employing great numbers of poor, and endanger the loss of so beneficial a manufacture to the kingdom.' The experience thus recorded did not however prevent recourse being had to glass as a means for raising revenue, and in 1746 various rates of duties were imposed upon the materials used for making different kinds of glass in Great Britain, and among the rest 2s. 4d. per cwt. upon the materials of which common bottles were made; in 1772 this rate was increased to 3s. 6d. per cwt.; in the following year it was made 3s. 8d.; in 1781 the rate was advanced to 3s. 10d.; and in 1787 to 4s. 0½d., at which it continued until 1804, when it was made 4s. 1d. In 1813, the duties upon glass, generally, were doubled, and the rate upon bottles became 8s. 2d. per cwt.; at which it remained until 1828, when it was reduced to 7s., and at this rate it has since continued.

Until the year 1826, Ireland enjoyed an exemption from duty upon all kinds of glass made at home, with the exception of common bottles, upon which a duty of 1s. 3½d. per cwt. was imposed in 1797; this rate was continued until 1828, when it was advanced to 7s. per cwt. the rate payable in Great Britain, and no alteration has since been made.

At the time the duty on glass bottles was doubled (1813), a tax of 2s. 6d. per cwt. on stone bottles was imposed at the instance of the makers of glass bottles, who feared that the advanced cost of their own manufacture would give an advantage to the makers of stone bottles. This rate was doubled in 1817. This duty on stone bottles never produced much beyond 3000*l.* per annum on the gross receipt, and it was repealed in 1834.

The quantity of bottle glass made in Great Britain, upon which excise duties were paid at different periods from 1790, are as follows:—

1790...	215,084 cwt.	1815....	160,175 cwt.
1795...	205,330	1820....	167,200
1800...	159,334	1825....	248,616
1805...	215,094	1830....	139,157
1810...	252,872	1834....	215,036

The amount of duty collected, and drawback paid, in the United Kingdom, during the five years from 1830 to 1834, was as follows:—

	Gross Duty.	Draw. on Export.	Net Revenue.
1830	£119,277	£56,070	£63,207
1831	102,854	50,197	52,657
1832	109,298	53,765	55,533
1833	113,120	55,724	57,396
1834	102,406	52,456	49,950

The whole duty is drawn back on exportation. The manufacture is treated of under GLASS.

BOTTOM HEAT, a term in horticulture expressive of an artificial temperature communicated by means of fermenting vegetable matter to the soil in which plants grow. It is usually obtained either by leaves, or tan, or fresh stable-litter thrown into a heap, and enclosed within the walls of a brick pit, the surface of which is covered with soil. The object of the cultivator is by such means to prevent the temperature of the soil from becoming less than 40° Fahr. or more than 90°. The plants to which this kind of temperature is applied are pine-apples, melons, cucumbers, &c., and certain tropical plants cultivated in stoves.

It is probable that this operation took its rise at a time when it was extremely difficult to procure an equable temperature of the atmosphere by other means: and when the heat of smoke in flues was employed, it had the effect of drying the air in which plants were cultivated till it was unfit for their respiration. Fermenting matter, the temperature of which was prolonged and steady, had in addition the great but hardly appreciated convenience, of keeping the air also gently moistened; and in this the greatest advantage was found to result. Physiologists tell us that although plants may not derive much direct advantage from atmospheric moisture, inasmuch as the principal part of the water of vegetation is derived from the soil, yet they are exceedingly benefited by the presence of a certain quantity of vapour in the circumambient air, because it prevents a too rapid evaporation from the leaves.

By modern improvements it has been found practicable to maintain the atmosphere of a hothouse in any required state of humidity or temperature; and when steam or hot water are made use of, this may be carried to a great degree, and the means of doing this are within the reach of most gardeners. One would therefore have thought that the system of bottom heat would be abandoned. So far however

is this from being the case that it is just as much employed as ever, and in combination with these additional powers, which were originally intended to supersede it. Such is the nature of prejudice, and such the inevitable consequence of blind practice unassisted by science. In procuring this bottom heat large sums are annually expended, without the smallest return. All that bottom heating can possibly do is better done by ordinary heating apparatus, and the cost of the bottom heat is altogether thrown away.

It is an axiom in horticulture that the more closely we approach nature in our management of plants the more certain are we to succeed in our attempts at cultivation. It therefore becomes an important question whether bottom heat has any existence in nature; of course it can only be looked for in equinoctial climates. Now the data that we possess upon this subject, although not very precise, are sufficient to enable us to answer in the negative. The water vines of the woods of Africa and India abound in a fluid which is much cooler than that of the atmosphere; its coolness is owing to that of the soil from which it is rapidly attracted; there can be no bottom heat in such cases. The most vigorous vegetation of the tropics is in woods where the soil is shaded from the direct action of the solar rays; we cannot suppose that bottom heat has any existence there. On the contrary when any such temperature as that which we artificially create is really met with, as on the shores of the north coast of New Holland, or in the naked plains of Peru, where it has been noticed by M. Boussingault, the effects of it are so prejudicial that vegetation can scarcely struggle against it.

Again, looking to practice, we find that the melons of Cashmere derive their nourishment from the cold waters of lakes; that in Persia, and even in Spain, the earth in which the roots of such plants feed is perpetually cooled by the evaporation of the water by which the soil is irrigated; and that even in this country the finest crops of pine-apples have been obtained in cases where the practice of giving bottom heat has been neglected (*Horticultural Transactions*, vol. i. n. ser. p. 388); and it is perfectly certain from experiments hitherto unrecorded that in other cases it is equally unnecessary. All that is required is to maintain the air in a proper state of warmth and humidity; this done the earth must of necessity partake in the temperature, and any effect of bottom heat that is desirable is gained. It is therefore to be recommended that the whole system of bottom heat be done away with where other modes of regulating temperature exist.

BOTTOMRY, BOTTOMREE, or BUMMAREE, is a term derived into the English maritime law from the Dutch or Low German. In Dutch the term is *Bomerie* or *Bodemery*, and in German *Bodmerei*. It is said to be originally derived from *Boden* or *Bodem*, which in Low German and Dutch formerly signified the bottom or keel of a ship; and according to a common process in language, the part being applied to the whole, also denoted the ship itself. The same word, differently spelt, has been used in a similar manner in the English language; the expression *bottom* having been commonly used to signify a ship, previously to the seventeenth century, and being at the present day well known in that sense as a mercantile phrase. Thus it is a familiar mode of expression among merchants to speak of 'shipping goods in foreign *bottoms*'.

The contract of bottomry in maritime law, is a pledge of the ship as a security for the repayment of money advanced to an owner or master, for the purpose of enabling him to carry on the voyage. It is understood in this contract, which is usually expressed in the form of a bond, called a *Bottomry Bond*, that if the ship be lost on the voyage, the lender loses the whole of his money; but if the ship and tackle reach the destined port, they become immediately liable, as well as the person of the borrower, for the money lent, and also the premium or interest stipulated to be paid upon the loan. No objection can be made on the ground of usury, though the stipulated premium exceeds the legal rate of interest, because the lender is liable to the casualties of the voyage, and is not to receive his money again at all events. In France the contract of bottomry is called *Contrat à la grosse*, and in Italy *Cambio maritimo*, and is subject to different regulations by the respective maritime laws of those countries. By the Germans it is termed *Bodmerei*, and is different in many of its incidents from *Bottomry* in this country.

In taking up money upon *Bottomry*, the loan is made

upon the security of the ship alone; but when the advance is made upon the lading, then the borrower is said to take up money at *respondentia*. In this distinction as to the subject matter of the security, consists the only difference between *Bottomry* and *Respondentia*; the rules of English maritime law being equally applicable to both.

The practice of lending money on ships was common in Athens, and in other Greek commercial towns. Money thus lent was sometimes called (*ναυτικά χρήματα*) ship-money. Demosthenes (*I. Against Aphobus*), in making a statement of the property left him by his father, enumerates seventy minæ lent on bottomry. If the ship and cargo were lost, the lender could not recover his principal or interest; which stipulation was often expressly made in the (*συγγραφή*) bond. (*Demosthenes against Phormion, and against Dionysodorus*, c. 6. 10.) The nature of the bottomry contract is shown in the Oration of Demosthenes against *Dionysodorus*:—3000 drachmæ were lent on a ship, on condition of her sailing to Egypt and returning to Athens; the money was lent on the double voyage, and the borrower contracted in writing to return direct to Athens, and not dispose of his cargo of Egyptian grain at any other place. He violated his contract by selling his cargo at Rhodes, having been advised by his partner at Athens that the price of grain had fallen in that city since the departure of the vessel. The plaintiff sought to recover principal and interest, of which the borrower attempted to defraud him: damages also were claimed, conformably to the terms of the bond. As neither principal nor interest could be demanded if the vessel were lost, it was a common plea on the part of the borrower that the ship was wrecked.

Money was also lent, under the name of *pecunia trajectitia*, on ships among the Romans, and regulated by various legal provisions. The rate of interest was not limited by law, as in the case of other loans, for the lender ran the risk of losing all if the ship was wrecked; but this extraordinary rate of interest was only due while the vessel was actually at sea. (*Dig. 32, tit. 2. De Nautico Fœnere*; *Molloy, De Jure Maritimo*, lib. ii. c. 11; *Parke on Insurance*, chap. xxi; *Benecke's System des Assecurans und Bodmereiwesens*, bd. 4.)

BOTZEN, CIRCLE OF, is one of the 7 circles or administrative divisions into which the government of Tyrol is divided. It is also called the circle of the Etsch (Adige) from the river of that name which runs through it, first in a S. direction from its source to Glurens, then E. as far as Meran, where it bends to the S.E. as far as the confluence of the Eisack near Botzen, from whence the united stream flows direct S. towards Trent. The valley of the Etsch from Glurens to the confluence of the Eisack, a length of about 45 m., forms the principal part of the circle of Botzen. From Glurens to Meran it bears the name of the Vinschgau, and is a fine alpine district, rich in pasture and also in fruit trees. Meran is a small town with old walls and towers, and was formerly the capital of the original county of Tyrol, which was much smaller in extent than the present Tyrol. The castle of the former counts rises on a hill about 3 m. from Meran. N. of Meran is a transverse valley opening into the great valley of the Etsch, which is called the *Passeyrthal*, and is known in contemporary history as the native district of Andreas Hofer, the Tyrolese chief, who fought against the French and Bavarians united in 1809, and was taken and shot at Mantua in 1810. Hofer's house is to be seen in the *Passeyrthal*, about 10 m. N. of Meran. The Etsch above Meran forms a continuation of falls or rapids for the space of 1 m., which have a very striking effect. Below Meran, towards Botzen, the valley becomes wider, and Botzen itself is in a kind of plain formed by the meeting of several valleys. This part of the country produces good wine and fruit in abundance. The system of irrigating the fields by means of small canals and locks is established here as well as in other valleys of the Alps. The circle of Botzen is bounded on the E. by the circle of Pustherthal or Eisack; on the S. by that of Trent; on the N. by that of the Oberinntal, from which it is divided by the chain of the Rætian Alps; and on the W. by the Valtelina and by the Munsterthal of the Grisons, being divided from the former by the Stülser Joch and the Ortler, and from the latter by the Wormser Joch and the high ridge called *Surras*. The pop. of the circle is 104,000 inh. The towns, besides Botzen, are Meran and Glurens, each with a pop. of between 2000 and 3000 inh., and many large villages. The language of the people is German, though at Botzen

and in the neighbourhood a dialect of the Italian is spoken almost universally. In the upper part of the valley, about Meran, the primitive simplicity of the Tyrolese manners still prevails. (*Voyage Pittoresque dans le Tyrol, et dans une partie de la Bavière, par le Comte de Bray; Inglis's Tyrol; Malte Brun's Geography.*)

BOTZEN, in Italian Bolzano, the chief t. of the circle of the Etsch, in the principality of Tyrol. It is situated in a pleasant valley, sheltered from the N. winds, on the riv. Eisack, an affluent of the Etsch or Adige, and just above the confluence of the two rivers. The traveller coming from Innsbruck, after having passed the ridge of the Brenner and the t. of Brixen, finds at Botzen the climate and the productions of Italy. Even the habits and the language of the people are in a great measure Italian, although German is also commonly spoken. This part of Tyrol, S. of Mount Brenner, is commonly called the Italian Tyrol, and it communicates with the plains of Lombardy by the valley of the Adige.

Botzen is a neatly built t. of near 8000 inh., and is known chiefly for its fairs, which are frequented by commercial travellers from all parts of Italy and Germany. The country near Botzen produces wine and fruits in abundance. Botzen is on the high road from Italy by Roveredo and Trento to Innsbruck, which was the only communication between the Tyrol and Lombardy, before the opening of the new road over the Stilfser Joch. [БОРИО.] A cross road strikes off from Botzen to the W., ascends the valley of the upper Etsch by Meran, and meets the new road at Mäls near Glurens. From this place, the traveller coming from Italy by the Stilfser Joch can go to Innsbruck, either by Botzen and the pass of the Brenner, or proceed from Mäls up to the sources of the Etsch and then descend by Nauders into the valley of the Inn which he then follows to Innsbruck, meeting at Landeck the high road leading from Switzerland into the Tyrol. Botzen is 32 miles N. by E. of Trento.

BOUCHAIN, a t. in France, dep. of Nord, of no great importance except from its fortifications, and from some historical interest attached to it. It is on the Escaut or Scheld, and on the road between Cambrai and Valenciennes, about 10 m. from each, and 115 m. N.N.E. from Paris; 50° 17' N. lat., and 3° 17' E. lon.

In 1711 the Duke of Marlborough invested Bouchain, having, by the most skilful manœuvring, passed without bloodshed the strong lines with which Maréchal Villars had covered the French frontier in this quarter. The French commander had boasted of these lines as impregnable, saying that he had brought Marlborough to his *ne plus ultra*. The siege of the town was a work of considerable difficulty, for the neighbouring country was partly laid under water; a French army superior in force to that of the allies, and commanded by a general of the greatest ability, watched every opportunity for interrupting the siege; and the town itself was secured by a strong garrison. But the skill of Marlborough triumphed over all difficulties, and the garrison was forced to capitulate in sight of the French army, which could not relieve the place. This exploit closed the campaign, and with it the long and brilliant successes of the English general. Bouchain was re-taken in 1712 by Maréchal Villars, and the possession of the town secured to France by the treaties of Utrecht and Rastadt, which were concluded shortly after.

Bouchain consists of two parts, the upper town and the lower town, which are separated from each other by ditches, filled from the Scheld and the Senset, which also fill the broad deep ditches which surround the fortifications. The parish church and the town-hall are in the upper town. The population is given in the *Dictionnaire Universel de la France* (Paris, 1804) at 1128: we have no later authority. (*Coxe's Life of the Duke of Marlborough.*)

BOUCHER, REV. JONATHAN, born 1737, died 1804, a divine, a political writer, a general scholar, and an English philologist of the last century, to whose memory justice has hitherto been imperfectly rendered.

He was born in Cumberland, near the little town of Wigton, at a place called Blencogo, where his father had a few acres of land, and if he were not one of those Cumbrians of whom Boucher himself says, that they 'are contented to live, like their rude forefathers, in wretched hovels, on the edge of moors and mosses, amidst dust, smoke, and indigence, yet he lived in a style of frugality somewhat primitive, not unlike what the travellers in that part of the kingdom may now see in the houses of the small landed proprietors. It is not however unusual to find in the families

inhabiting such houses that there is an uncle, a brother, or a son who is a schoolmaster in some distant county, or perhaps who is in the church; and the number is not small of persons of this Cumbrian origin who have attained a well-deserved eminence.

Boucher was trained first at a school at Blencogo, and afterwards at Wigton in grammar learning. At Wigton he had for his master, the clergyman of Graystock, Mr. Blaine, with whom he read some of the higher Latin and Greek classics. Mr. Blaine is described by one who was acquainted with him, as 'a man of true piety and learning, but affecting the rusticity which prevailed in the farmers around him, instead of endeavouring by a better example to show them how all the virtues they possessed might be exhibited in union with the decencies and proprieties of life.' It is added, 'he spoke in the tone and dialect of his rustic countrymen, and took particular care that its Doric strength should not be debilitated by the introduction of courtly phrases.'

Under this master Boucher pursued his studies with great assiduity, and at the age of seventeen or eighteen he entered on the business of school-instruction. A gentleman residing at Wigton placed his children under his care; but in a little time he became an usher in the grammar-school at Saint Bees, which at that time, about 1756, enjoyed a high reputation under Dr. James, a good and learned master. While here, the instruction of youth in the rudiments of classical knowledge was his business; the perusal and study of the great writers, and especially of the great poets of antiquity, his recreation. He is said to have here executed a translation of Tyrtæus.

About the year 1756 or 1757, as we may collect from circumstances, when he was about nineteen or twenty years of age, he left England, and took up his residence amongst the American colonists.

Such a man could not but be a valuable acquisition to any colony. His services were soon engaged by a gentleman in Virginia of wealth and respectability, as tutor to his children. That power which natural talent, attainment and character united, never fail to give, where the natural tendency is not counteracted by some one of the various forms in which an over-estimate of them by the party himself appears, was soon manifested. It was perceived that while he could make boys learned, he had the ability also to instruct men and make them better. The vestry of the parish of Hanover in the county of King George, Virginia, nominated him to the rectory of that parish in 1761, when he was only four-and-twenty. This nomination he accepted, and instantly repaired to England, where he received ordination from the Bishop of London both as deacon and priest on the same day. After visiting his native county, he returned to take upon himself his new charge.

From this time to 1775 he continued in an assiduous discharge of his ministerial duties, and in endeavours to improve as far as was in his power, the moral and intellectual state of the parts of America in which he was placed. He removed from the parish of Hanover to that of Saint Mary in Caroline county, Virginia, lying on the Rappahannock. When Sir Robert Eden became governor of Maryland, he appointed Mr. Boucher to the rectory of Saint Anne's in Annapolis, and afterwards of Queen Anne's in Prince George's county, where he was living in 1775, when there was a violent and sudden change in his affairs. These fourteen years were a critical period in the history of the American colonies. Mr. Boucher has afforded us the means of judging with tolerable accuracy how his talents, station and character, were made to bear upon the feeling and action of the people with whose interests he had connected his own. Many years after, he published a volume of discourses which he had delivered from the pulpit at various times during those years. Most of them were printed at the time when they were delivered. They are better entitled discourses than sermons. They are in fact the most part political sermons, preached however usually on public occasions, when it is allowed to the ministers of religion to enlarge somewhat the usual limits of pulpit instruction. They exhibit a robust sense, a mind stored with classical erudition, and there are occasionally bursts of simple eloquence. The first is on the peace of 1763, intended to rebuke and check the spirit of a love of arms. Another contends for a liberal toleration to dissenters and papists. In his discourse on the education suitable to the American colonists which he wrote in 1773, at the request

of one of the governors, he insists more on the necessity of a Christian education, though at the expense of his own favourite classics. He gave all the weight of his influence against the delusions of the wild sectaries who seem to have abounded in Virginia. On the question of the Stamp Act he partook of the popular enthusiasm: and on the whole he seems to have been inclined to a liberal policy, and to the maintenance of the independence and just rights of the colonies.

But when the time came that all connexion with the mother country was to be renounced, and all allegiance to the British throne, Mr. Boucher was one of those who neither admitted the principle, nor thought themselves at liberty to remain entirely passive. He continued to use in his church the public liturgy, and to read the prayers for the king and the royal family as he had been accustomed, when all around him was resistance and rebellion. He was now regarded in the light of one who was a traitor to the common interest. It was intimated to him that he must either desist from reading those prayers or resign his charge. His conduct was decided. He resigned his charge, and in his farewell sermon which was preached at the lower church in the parish of Queen Anne in Maryland, he thus fearlessly takes his ground;—'Entertaining all due respect for my ordination vow, I am firm in my resolution, whilst I pray in public at all, to conform to the unmutated liturgy of my church; and, reverencing the injunction of an apostle, I will continue to pray for the king and all that are in authority under him; and I will do so, not only because I am so commanded, but that, as the apostle adds, we may continue to lead quiet and peaceable lives, in all godliness and honesty. Inclination, as well as duty, confirm me in this purpose. As long as I live therefore, yea, while I have being, will I with Zadoc the priest and Nathan the prophet, proclaim—God save the king.'

This was a time when there could be no compromise. His property, all of which was in America, was lost. He was so much an object of popular dislike that his person was in hourly danger, and, in 1775, he finally quitted the American shores, and returned to his native land. His prospects thus blighted, he had to begin the world anew, aided by some compensation from the government at home for the losses which he had sustained with other American loyalists. Little is known of him during the next nine years of his life. But it is believed that he had recourse to his original profession, and that he established a school at Padfington. In the church he obtained no preferment till 1784, when Parkhurst, a clergyman, the author of two well-known scripture lexicons, to whom he had become known, presented him to the vicarage of Epsom in Surrey, at which place it is believed he went immediately to reside, and where he died.

In this last twenty years of his life we find him devoted, as in the former period, to religion, to politics, and to literature. He collected and published, in 1797, the discourses before spoken of, and prefixed to them a dedication to Washington, with whom before the war he had been on terms of intimacy, and for whom he never ceased to feel a high personal respect. He added also a long preface, entitling the whole collection 'A View of the Causes and Consequences of the American Revolution.' He printed also two assize sermons, and in every way supported to the utmost of his power the Pitt policy in respect of France, adhering to the principles which he had maintained in Maryland in such dangerous times and for which he had been so great a sufferer. But the kind of literature to which he directed his attention was changed. It became more English. The love of his native country, which is said to be stronger in those born in mountainous regions than in other persons, appeared in various forms. He addressed his Cumbrian friends on the backwardness which they showed in following in the track of public improvement. He wrote some of the best portions of Hutchinson's History of that county. He erected in the church of Sebergham a monument to the memory of Relph, a Cumbrian poet. He also became a Fellow of the Society of Antiquaries of London, and was made an honorary member of the Society of Antiquaries of Edinburgh and also of the Stirling Literary Society. His acquaintance among the men devoted to antiquarian and especially English philological literature became extended, and he enjoyed the intimacy and particular friendship of several of them.

His mind at length became determined towards a particular object: it was to prepare a kind of supplement to the

Dictionary of the English Language by Dr. Johnson, in which he should introduce words provincial and archaical. By provincial, he meant words which are still found in the speech of certain parts of England, though not found in writing or heard in the conversation of the cultivated and polite; words however which are genuine portions of the English language, and to be found, most of them at least, in our early and almost forgotten writers. By archaical, he meant words which are found in those writers, though now regarded as obsolete, and which are not now, and perhaps never were, in any general use by the common people. These words it was his intention to illustrate by quotations from the authors in which they occur, and also by dissertations on their history in a manner much more at large than Dr. Johnson had thought it necessary to do in respect of the purer and better terms which he had allowed to find a place in his Dictionary.

This was a design of great magnitude: and Boucher set himself to the accomplishment of it with great earnestness of purpose, and proceeded with an unwearied perseverance which was truly admirable. He made his classical knowledge bear upon it with effect, and he obtained no mean acquaintance with the languages cognate to our own and the other modern languages of Europe. He had an intimate acquaintance with the dialect of Cumberland and Westmorland, where perhaps more of peculiar terms remain than in other counties, which he had acquired when a youth, a time of life when such knowledge is best attained. He made a large collection of books applicable to his purpose, and he established a correspondence with persons in many of the counties of England, from whom he received contributions for his vocabulary, and sometimes valuable remarks.

But the plan on which he proceeded included more than is generally understood to fall within the province of lexicography. He made his dictionary the deposit of what he was able to collect concerning many of the usages of the English nation—dress, sports, superstitions, whatever in short falls under the not strictly-defined term of popular antiquities: so that his work may, in many portions of it, be read for amusing or interesting information, as well as consulted as a dictionary for the illustration of the words which it contains. In this respect it resembles Dr. Jamieson's valuable Dictionary of the Scottish language.

Mr. Boucher began this work in or about 1790. It was not too late a period of life for him to indulge the hope and a reasonable expectation of being able to complete it, well-furnished as he already was with much of the information needed for such an undertaking. In 1802 it had so far advanced towards maturity that he issued a prospectus of the work, and proposals for publication. His health however was then beginning to decline. In 1803 he visited his native county. He lived till the 27th of April in the following year, when he died without having committed any part of his large manuscript to the press.

Of the dictionary thus left unfinished the letter A was published after his death as a specimen, by his friend and frequent correspondent Sir Frederick M. Eden. The merits and the value of his collection were understood from this specimen, and appreciated in every way highly, by those who take an interest in such inquiries. But still there was not sufficient encouragement given to the family to risk the publication of so large a manuscript. It remained, with other papers connected with it, in the hands of the family till 1831, when it was purchased with the intention of immediate publication. Two numbers of the projected work are all that have yet appeared, containing Mr. Boucher's learned introduction to his work, which happily was left completed by him, and the words of the alphabet as far as *Blade*. It is to be hoped that the work will proceed, for though perhaps not entirely adapted to the present improved state of philological knowledge, and to be regarded rather as anecdotes of the language than as a complete lexicon of archaic and provincial words, it contains much valuable information, the result of original reading and original reflection.

For the facts in this life we have been principally indebted to Boucher's own writings, to the Gentleman's Magazine, vol. 74, p. 591, where is a biographical notice of him inserted at the time of his decease, and to a little volume printed at Carlisle in 1829, entitled *The Life and Literary Remains of Thomas Sanderson*.

BOUCHES DU RHONE, a dep. in the S. of France, containing part of the former military government of Pro-

venes. The dep. lies along the coast of the Mediterranean, by which it is washed on the S.S.W.: on the N.N.E. it is bounded by the dep. of Vaucluse, from which it is separated by the Durance: on the E. it is bounded by the dep. of Var; and on the N.W. by that of Gard, from which it is separated by the Rhône. The Ile de la Camargue, or Carmague, an island of alluvial formation, enclosed by the sea and the two principal arms or outlets of the Rhône, is included in this department. The dep. is of a quadrilateral figure, having its N.W. and E. sides respectively 41 or 42 m.; but the sea-coast, which is about 77 m. long in a straight line, exceeds by about 24 miles the side which runs along the bank of the Duranoe. The area of the dep. is 601,960 hectares (according to the last edit. of Malte Brun), which, computing the hectare as equal to 2.471143 English acres, will give 1,487,539 English acres for the area, or 2324 sq. m., being equal to about 10-11ths of the county of Devon. The surface of the department in 'square leagues,' as given by Malte Brun, differs materially from the above measurement, which, however, we believe to be the more correct. The chief town is Marseille, which is 497 m. S. by E. from Paris, through Auxerre, Autun, Châlons sur Saône, Lyon, Valence, Avignon, and Aix.

The dep. is not, on the whole, mountainous, but there are some considerable elevations. The branches of the Alps, which stretch through the adjoining dep. of Var, and skirt the S. bank of the Durance in the upper part of its course, reach into the Bouches du Rhône, and cover the E. parts. Other eminences extend from these towards the W., presenting barren table-lands, and terminating in steep and abrupt descents, while the branches of the Alps are distinguished by their gradual declivities. The *Ile de Carmague*, and that part of the dep. adjacent to it, are very marshy, and the sea forms several pools or *étangs*, two of which, those of Berre and Valcarès, the latter in the Ile de Carmague, are of considerable extent. [BERRE.] The sea-coast, low in the neighbourhood of the Rhône, is in other parts bold and lofty. Opposite to the coast are several small islands—Ratoneau, Pomegue, If (on which is a strong castle), all near the mouth of the port of Marseille; Le Maire, Jaros, Riou and Planier. They are all of little importance. There is a tower on the Ile de Planier, which lies farthest out to sea. The principal rivers are the Rhône, and its tributary the Durance, which bound the dep. on the N.W. and N.N.E. sides: the others are of minor importance, such as the Arc, which rises in the dep. of Var, and flows into the *étang de Berre*, after a course of about 45 m.; the Touloubre, which flows into the same *étang*, after a course of from 30 to 35 m.; and the Verne, which falls into the sea very near Marseille, after a course not quite equal to that of the Touloubre.

The island of Carmague, which forms a Delta, has Trinquetaille, a suburb of the city of Arles, at its apex. The testimony of the antients makes it appear that the mouths of the Rhône have varied materially both in number and configuration. The most W. of the two streams already noticed has shifted its bed towards the W., enlarging the Ile de la Carmague in that direction; while the accumulation of materials brought down by the stream has elevated the soil about the mouths of the river, and caused the land to gain considerably on the sea. The E. arm of the Rhône there is reason to believe has been less variable: but the formation of small alluvial islands causes its waters to be subdivided into several channels just before it reaches the sea. There are some traces of a canal cut from Arles to the sea by the Roman General Caius Marius. The quantity of sand brought down by the Rhône is so considerable as to cause the navigation of its channel to vary continually, and persons are kept in pay by the government whose regular business is to sound the bed of the river and make known its variations to shipmasters.

The *Ile de Carmague* approaches in form to an equilateral triangle of about 25 m. each side. It is composed of a fine gravelly soil intermingled with marshy land. The interior of the island is the receptacle of stagnant waters, and is in great part occupied by the *étang of Valcarès* and by others of less extent. These *étangs* and marshes often communicate with the sea, especially during the prevalence of the easterly wind. The whole island rests on a bed of sea-sand which, having preserved a great quantity of salt, imparts this quality to the herbage and renders it particularly acceptable to the cattle which are put to graze. To so great a degree is the soil in some parts impregnated with

salt, that it would be unproductive, if the inhabitants did not flood the land by the waters of the Rhône, the rich mud of which corrects the drought that the salt would otherwise produce. There are brine springs in different parts of the island and saltworks are carried on. (*Encyc. Méthod.*)

Near the E. bank of the E. channel of the Rhône, between it and the *étang de Berre*, is the plain of *La Crau*, 'the most singular stony desert,' says Mr. Arthur Young, 'that is to be met with in France or perhaps in Europe.' It contains, according to the estimate of the same intelligent traveller, from 140,000 to 170,000 English acres. It is composed entirely of shingle, the stones varying in size from that of a pea to that of a pumpkin; and it is as free from any intermixture of soil as the shingle upon the sea-shore. In places these stones have become united so as to form a species of marble capable of receiving a polish. Beneath these stones is a soil which Mr. Young describes as not so much a sand as a kind of cemented marble, a small mixture of loam with fragments of stone. Vegetation is poor and miserable, yet the district supplies winter pasturage to immense flocks of sheep which are fed in summer in the Alps about Barcelonnette. By means of the Canal de Craponne, parts of this naturally sterile region have been broken up into corn and meadow land, and rendered productive, forming a striking contrast with the part which yet remains an arid desert. The lower grounds (for the surface is not level) produce oaks, walnut-trees, mulberry-trees though not of great size, olives, and vines. The almond-tree does not succeed. (Young's *Travels in France*; *Encyc. Méthod.*)

The soil of the dep. varies considerably. The N.E. and N. districts along the bank of the Duranoe are sterile and require great labour to make them productive, but the N.W. part is of great fertility. Unhappily this district is exposed to the disastrous inundations of the Rhône. The *étangs* and marshes render a considerable part of the land near the coast incapable of cultivation. The produce of the dep. in corn is not great, being scarcely equal to a third of what is required for home consumption. Rice is among the grain cultivated here. (Robert, *Dict. Géog.*) A considerable quantity of wine is produced, and some kinds, as those of Cassis and La Ciotat (white wines), are much esteemed. Olives form one of the chief objects of attention with the cultivators, and oil is one of the most important of its productions; and almonds, nuts, capers, oranges, pomegranates, and figs, are abundant. The mildness of the climate is favourable to the growth of shrubs and flowers, among which may be mentioned the cypress, the laurel, the myrtle, the cistus, and the phillyrea. The pasturages of this dep. are chiefly resorted to in winter: in summer they are abandoned from the great heat, and the cattle are driven to the more refreshing plains of Drôme, Isère, and Hautes and Basses Alpes. The use of the plain of La Crau for this winter pasturage has been already noticed. It is said that 700,000 sheep and an immense number of goats are pastured in the department. The quantity of cattle reared is also very great; and a large number of light and horses are produced. The Ile de la Carmague is chiefly occupied in pasturage. The cattle are here left at liberty night and day, from which cause they are very wild. There are in this island nine villages, many country houses, and nearly 350 farms, the occupiers of which rear annually 40,000 sheep, 3000 oxen, and as many horses. In this island is the royal sheep farm of L'Armillière. The district of Crau produces manna and an insect called kermès, which is well adapted to make vermilion. The rearing of silkworms is much attended to in the department of Bouches du Rhône. The salt marshes yield herbs of which the inhabitants make kelp.

In the S.E. dep. coal is dug, and there are quarries of marble of all colours and of great value, freestone, slate, gypsum, limestone, whetstones, and alabaster, or a stone capable of being wrought like alabaster. The *Encyclopédie Méthodique* adds that there are several mines of iron and lead.

The climate, as may be inferred from its productions, is warm: and would be most delightful to the inhabitants, were they not, at least in the neighbourhood of Marseille, exposed to the annoyance of swarms of gnats. The violence of the wind called *Mistral* is also a great drawback.

The manufactures are very various. Cotton goods, paper, woollens of various kinds, morocco and other leather, porcelain, earthenware, glass, and soda are manufactured. Brandy is distilled: and liquors and vinegar are made.

But perhaps the chief branch of manufacture is that of soap, which enjoys a high and deserved reputation all over France. The exports of the dep. comprehend its natural productions, wine, oil, honey, wax, dried fruits, &c., the fish (anchovies, sardinas, tunnies, &c.) caught and cured by the fishermen of its coast, and its manufactures. Marseille is the chief port in the dep., and indeed, excepting Bordeaux, in all France. [MARSEILLE.] The internal trade is facilitated by the navigation of the Rhône and by the canal of Arles, which runs from Arles to the sea nearly parallel to the main stream of the Rhône. The canals de Craponne, du Réal, de Boisgelin, and du Végueyral, are rather for the purpose of irrigation or drainage. The canal de Craponne runs from the Durance to the Rhône at Arles, with branches to Istres and to St. Chamas, both of which places are near the Etang de Berre: the canal du Réal is in the N.W. part of the department: that of Boisgelin runs from and again into the Durance: that of Végueyral drains the marshes E. of Arles. The Durance, we believe, is, from its rapidity, not navigable.

The dep. is subdivided into the three arrondissements of Marseille (which is the capital of the department), of Aix, and of Arles: and contains 27 cantons and 105 communes. The pop. in 1832 was 359,473: about 154 or 155 to a sq. m. The pop. at the previous census of 1826 was 326,302, showing an increase of 33,171, or of more than 10 per cent. The pop. of 1832 was thus divided among the three arrondissements: arrond. of Marseille, 178,866; arrond. of Aix, 102,674; arrond. of Arles, 77,933. The dep. for ecclesiastical purposes is divided into the diocese of Marseille, including that city and its arrond., and the arch-diocese of Aix. The district included in the dep. was formerly divided among the dioceses of Aix, Arles, and Marseille: but the diocese of Arles is now (it is probable) incorporated with that of Aix, the archbishop of that see taking his title from Aix, Arles, and Embrun. The Bishop of Marseille is one of his suffragans. The dep. is under the jurisdiction of the *Cour Royale* of Aix; and is included in the VIIIth Military division, of which Marseille is the capital. It sends five members to the Chamber of Deputies. There is an *Académie Universitaire* at Aix, which includes a faculty of theology and one of law.

The chief towns (with their pop. in 1832.) are:—Marseille (121,272 inh. in the town, 145,115 in the whole commune), on the sea; Aix (15,916 inh. in the town, 22,575 in the whole commune); Arles (14,894 inh. in the town, 20,236 in the whole commune), Tarascon (9225 inh. in the town, 10,967 in the whole commune), on the Rhône opposite Beaucaire; Martigues (5335 inh. in the town, or 7379 in the whole commune), on the channel communicating between the sea and the Etang de Berre; La Ciotat (4345 inh. in the town, or 5427 in the whole commune), on the sea S.E. of Marseille; Salon (4187 inh. in the town, or 5987 in the whole commune), upon that branch of the canal de Craponne which branches off to Istres; Aubagne (3925 inh. in the town, or 6349 in the whole commune), on the river Verne on the road from Marseille to Toulon; Auriol (3373 inh. in the town, or 5320 in the whole commune), also on the river Verne; and St. Remi (3213 inh. in the town, or 5464 in the whole commune), on the canal du Réal.

The population returns for 1832 give the following communes as containing above 2000 and under 5000 inhabitants:

	Population of the Town. Commune.			Population of the Town. Commune.	
	Town.	Commune.		Town.	Commune.
Allanch .	1,741	3,711	Gardanne	2,459	3,234
Barbentanne	1,864	2,800	Istres .	2,483	3,023
Chamas, St.	2,502	2,632	Lambesc	2,923	3,898
Château Renard	—	4,152	Langon .	1,703	2,060
Équilles .	1,847	2,280	Orgon .	1,691	2,584
Eyguières .	2,614	2,987	Pélissanne	2,334	2,500
Eyragues .	1,811	2,227	Roquevaire	—	3,218
Fontvieille .	1,580	2,056	Trets .	2,504	3,014
Fuveau .	1,513	2,004			

This department has produced several eminent men. Petronius Arbiter, a Latin writer of some note; Adanson, the naturalist, the Abbé Barthélemi; Brueys, the dramatist; Massillon, one of the chief ornaments of the French pulpit; Nostradamus; Vanloo, the painter; Tournefort, the botanist and traveller, &c.

BOUFLERS, LOUIS-FRANÇOIS DUC DE, descended from one of the most ancient and noble families in Fiardy, the second son of François II., count of Bouflers

and Cagni, was born January 10, 1644. He entered the royal guards as a cornet in 1663, during which year he was present at the siege of Marsal in Lorraine. In the following campaign he was engaged in an expedition to Gigari in Africa; and so much talent did he afterwards exhibit in Flanders, that he was allowed to purchase from the Duc de Lauzun the colonelcy of the royal dragoons. In all the enterprises of Turenne he bore a distinguished part; and he was severely wounded at the battle of Woerden, under the maréchal of Luxemburg, in the winter of 1673. Having passed into Germany, he was again wounded at the battle of Einshelm in 1674, and received the thanks of Turenne for having greatly contributed to the success of that day. In the memorable retreat after the death of Turenne, in 1675, he commanded the French rear; and from that time till the peace of Nimeguen, in 1678, he was employed on active service. He then commanded in Dauphiné and on the frontiers of Spain. His gallantry at the siege of Luxemburg was rewarded with the government of that city and province in 1686; and the seasonable detachment of a corps from the army of the Moselle, which he commanded in 1690, decided the event of the battle of Fleurus. In 1691 he was again wounded in an attack upon a hornwork at Mons; but during the remainder of that campaign he triumphantly kept the field against the allies, who were more than threefold his number, and continued the blockade of Liège and of Huy. On his return to court during the winter, he was personally invested by the king with the collars of the several orders into which he had hitherto been admitted only by proxy. When William III. moved to the relief of Namur, Boufflers was selected to oppose him. He then partook of the glories of Steenkerken. In 1693 he was elevated to the dignity of maréchal of France, and received the new order of St. Louis. He defended Namur against the allies, commanded by William III., for sixty three days of open trenches in 1695, and repulsed four general assaults. After its capitulation, he was detained a prisoner of war for a fortnight; and the king, in recompense for his great services, erected the county of Cagni and some adjoining domains in Beauvaisis into the dukedom of Boufflers. In 1696 he superintended some preparations for a projected invasion of England in support of James II., which was not put in execution. In the war of the Spanish succession, he commanded in the Netherlands; and on June 31, 1703, in conjunction with the Marquis de Bedmar, he obtained a signal advantage over the Dutch at Eckaren, for which he received from the king of Spain the collar of the Golden Fleece. In 1708, after the battle of Oudenarde, he undertook to defend Lille against Prince-Eugene; and he maintained the town from August 12th till October 26th, when he capitulated, after having repeatedly declined the king's urgent wish that he should cease to expose himself: but the citadel into which he retired held out till the 11th December following. The king loaded him with new honours for the brilliant defence, and made his duchy into a peerage. His presence in the capital in March, 1709, and his deserved popularity among the citizens, contributed to allay a tumult which had arisen on account of scarcity of bread; after which, hastening to Flanders, he tendered his services to the maréchal Villars, an officer junior to him, and brought off the right wing of his army in good order, losing neither cannon nor prisoners at the disastrous battle of Malplaquet. This was his last public act; he died at Fontainebleau, March 22, 1711, in the sixty-eighth year of his age, and was buried with great military splendour in the church of St. Paul at Paris.

The above sketch of the exploits of this distinguished captain is necessarily very incomplete; his history, in truth, forms the military history of the half century during which he served, and its details must be sought in the general annals of Europe. Many detached anecdotes redound greatly to his honour. Prince Eugene congratulated him upon the glory which he had acquired in defending Lille, as far superior to that accruing to himself by its capture; and it was remarked that horse-flesh was the only food served during that siege at a table, which, on other occasions, was pre-eminent for its costliness. So magnificent were the banquets with which Boufflers regaled his officers, while he held the command of a mimic camp formed by the king at Compiègne, for the instruction and amusement of his grandson the duke of Burgundy, that Louis XIV. observed that the young prince must decline all competition, and remain content to be a guest. The detention of

Boufflers after the surrender of Namur was a breach of the articles of capitulation, and was defended as a reprisal for similar violence which had been offered to the garrisons of Dixmuiden and of Deinse. When Boufflers justly remarked that in that case not the commander, but the garrison ought to be responsible, he was silenced by the high and not over-charged compliment, that his single person was esteemed equivalent to 10,000 men. We do not recollect a more true appreciation of feminine grace than is exhibited by a repartee ascribed to the duke of Boufflers. When he was extolling some young beauty of the day, a coxcomb asked, *A-t-elle de l'esprit ?* and was left mute by the veteran's ready answer, *Comme une rose.*

BOUGAINVILLE, JEAN PIERRE DE, was born at Paris December 1st, 1722, and during his short career distinguished himself by some publications now forgotten; among them was a French translation of the *Anti-Lucretius* of Cardinal Polignac, and a Parallel between the expedition of Kouli Khan and that of Alexander. Some poems, among which is the germ of Pope's *Universal Prayer*, and several papers in the *Mémoires* of the Academy, also were printed by him. He held numerous employments of high literary distinction, as secretary to the Academy of Inscriptions, censor royal, keeper of the antiquities in the Louvre, and secretary in ordinary to the Duke of Orleans, &c. He died at Loches June 22nd, 1763.

His younger brother, LOUIS ANTOINE DE BOUGAINVILLE, who more than doubled his years, led also a much more active existence. He was born at Paris November 11th, 1729, and studied in the university of that capital, with the intention of proceeding to the bar. Much of his time had been devoted to mathematics, and instead of commencing as an advocate at the Palais, he surprised his friends by enrolling himself in the Mousquetaires Noirs, and by publishing a treatise on the integral calculus within fifteen days from his enlistment. We know not in what manner he passed from military to diplomatic pursuits, but we afterwards find him employed as secretary of embassy in London, where he was elected fellow of the Royal Society. Returning to the army, he served in Canada with some distinction till 1759; and in 1763, when the merchants of St. Malo wished to colonize the barren territory of Falkland's Islands (the Malouines, as they were called, from their pretended discoverer), Bougainville was active in promoting the settlement. The Spaniards however were not willing that the French should invade their imaginary right of sovereignty in the western hemisphere; and the French government also speedily discovered that the mere possession of a rocky domain, which did not yield any return, and which derived its entire support from the mother country, was by no means worth the hazard of war. They gave orders therefore for the surrender of the settlement, and Bougainville was employed to undo his own work. The position which he had chosen for the establishment was at Port Louis, on the eastern side of the lesser of the two large Islands, on a part of the coast which afforded a good harbour; and he was sanguine in his expectations that the new colony would in a great degree indemnify his country for the loss of the Canadas. The Parisian cabinet however thought otherwise; and in 1766 they bartered for the surrender of Port Louis to the Spaniards, who gave it the less swelling but perhaps more appropriate name of Port Solidad. Bougainville was instructed to execute the transfer, and his commission authorized him afterwards to traverse the South Sea between the tropics, for the purpose of making discoveries, and to return home by the East Indies. For this circumnavigation of the globe, a frigate, *La Boudeuse*, carrying twenty-six twelve pounders, and a store ship, *L'Etoile*, were placed under his command. His crew consisted of eleven commissioned officers, three volunteers, and 200 mariners; and the Prince of Nassau Sieghen obtained permission to accompany him. His voyage, although not to be compared in point of interest to that of Cook or Anson, is very agreeably related by himself. It was translated into English by Forster in 1772, and an abridgment of it is given in the appendix to the thirteenth volume of Kerr's *General Collection of Voyages and Travels*.

Bougainville sailed from Nantes November 15th, 1766. On the 1st of April following he surrendered Falkland's Islands to some Spanish frigates which had been dispatched for the purpose, and he was then delayed till November at Monte Video by the non-arrival and the necessary repairs

of his store-ship. In working off the shores of Tierra del Fuego he suffered much from boisterous weather. What little intercourse he established with the Patagonians was amicable; and he confirms the general opinion of their height and muscular strength, though he by no means extends either to gigantic dimensions. Storms, mists, sunken rocks, difficult currents, and an archipelago which appropriately received the name of *The Dangerous*, were encountered before he arrived in sight off Otahete on April 2nd; and the well-known blandishments of that island appear to have exposed him to scarcely less peril than he had undergone at sea. At parting he carried with him as a volunteer Aotourou, the son of a native chief. The youth's talents appear unhappily to have been very slender, and he acquired little benefit from mixing with the civilized world at Paris. Even that little was of no advantage to his countrymen, for he died on his homeward passage in 1770. Almost the only circumstance demanding notice in the remainder of Bougainville's voyage was the discovery that one of his crew, named Baré, was a woman. 'She had always behaved with the most scrupulous modesty, was neither ugly nor handsome, and not more than twenty-six or twenty-seven years of age.'

Scurvy and a failure of provisions occasioned very severe suffering during the latter part of this voyage, till on September 28th, Bougainville, having been at sea for ten months and a half, cast anchor off Batavia, which miserable station was not inapily named by Aotourou in his native language, *Enoua mate*, 'the land which kills.' At the Isle of France he parted company from *L'Etoile*, the services of which were no longer necessary, and on March 16th he entered St. Malo, having been engaged upon his expedition two years and four months.

Bougainville commanded a ship of war during the American revolutionary contest. He died at the advanced age of eighty-two years on August 31st, 1811.

BOUGAINVILLE ISLAND. [NEW GEORGIA ARCHIPELAGO.]

BOUGUER, PIERRE, was born at Croisic, in Basse Bretagne, February 16, 1698. The father was professor of hydrography at that place; the son, after receiving the instructions of his father in mathematics, and making considerable progress by himself, taught first at Croisic, and afterwards at Havre-de-Grace. In 1727 he gained the prize of the Academy of Sciences for a memoir on the method of masting ships; in 1729, for one on the method of observing the stars at sea and on astronomical refractions, his formula and results being the same as those afterwards given by Simpson, but more complicated in form; in 1731, for a method of observing the dip of the compass at sea. In 1732 he presented a memoir on the inclinations of the planets' orbits, in which he treats the subject on the theory of Des Cartes: he was the last of the academicians who held by that system. In 1729 he published a memoir on the gradual extinction of light in passing through successive imperfectly transparent substances. By a series of experiments, of which M. Biot speaks in high terms (*Biog. Univ.*), he imagined he had proved that the light from the edges of the sun is weaker than that from the centre. M. Arago has disproved this assertion by new experiments.

The reputation of Bouguer being established as a profound mathematician, and particularly (to use a phrase of M. Condorcet when speaking of him in his *éloge* of La Condamine) as 'possessing that sort of talent which is able to distinguish the little causes of error, and to find the means of remedying them,' he was chosen, in company with La Condamine and others, together with two Spanish commissioners, to proceed to Peru, for the purpose of measuring a degree of the meridian. Thither he accordingly departed in May, 1735, and remained till 1743. The most essential parts of the operation necessarily fell upon him, as La Condamine was comparatively new to the subject. This important operation, which is one of the best of its kind, was carried on under difficulties as great as were ever encountered by any scientific expedition. The inhabitants of the country were either to be heretics or sorcerers, or to have come in search of new gold mines. Even persons attached to the administration employed themselves in stirring up the minds of the people, and when at last they had procured the assassination of the surgeon of the expedition, one was able to escape the consequences by procuring a verdict of lunacy against himself, and another by taking orders. The country was

was difficult and dangerous : and this obstacle was increased by jealousies which arose between the French and Spanish commissioners, as well as between Bouguer and La Condamine. The former, who felt that he was the main resource of the expedition, suspected that the latter would appropriate an undue share of the merit to himself. The consequence was however of no harm to the real objects of the expedition, but perhaps rather the contrary ; for it caused Bouguer, La Condamine, and the Spaniards George Juan and Antonio de Ulloa to conduct their operations separately, while the near accordance of the three in their results was a favourable presumption for their accuracy. The results did not differ from their average by a five-thousandth part of the whole, in the length of a degree of the meridian.

The leisure which impediments occasionally gave enabled Bouguer to apply himself to the determination of points not immediately connected with the main object. Among other things, he ascertained the amount of refraction at considerable heights above the sea. He found reason to suspect the effect of the attraction of Chimborazo upon the plumb-line, but not knowing the mean density of the mountain, could not perform the task which Maskelyne afterwards undertook. [ATTRACTION.] A part of the observations (on the obliquity of the ecliptic) were forwarded as soon as made to Halley, who published them in 1739 in England : but an account of the whole was published in Paris, in 1740, under the title of 'Figure de la terre,' &c. In 1752 followed a justificatory tract on several disputed points ; in 1753 a treatise on navigation, abridged in octavo by Lacaille in 1769, and reprinted in 1781 and in 1792, with notes by Lalande. In 1754 Bouguer published an attack on La Condamine, relative to the part of the great survey claimed by both. The latter replied with temper ; and as his tract was the more amusing of the two (an observation both of Condorcet and Biot), he carried the public with him. It seems to be admitted on all sides, that Bouguer had no ground of offence whatsoever, and that La Condamine behaved towards him with great respect and moderation.

Bouguer was afterwards employed to verify the degree measured by Dominic Cassini between Paris and Amiens. This he did in conjunction with Cassini de Thury, Camus, and Pingré. The results were published in 1757. He died August 15, 1758, while preparing a new edition of his work on the gradual extinction of light, which was afterwards completed and published by Lacaille in 1760. In this work he mentions an invention of his in 1748, which he calls the *heliometer*, and which is in fact the first *double object glass micrometer*, and was properly so called. That of Dollond, which is the more easily used, and is esteemed the better instrument, was invented independently a few years afterwards, and consists in an object-glass divided into two halves. [MICROMETER.] Bouguer attacks the Royal Society of London, which a second time had recourse to the proceeding mentioned in the life of Auzour, and had published (but not till after Bouguer's discovery had been made known) the prior invention of an Englishman named Savery. He reminds them of the circumstance to which we have just referred, and, as Delambre remarks, having a better case than against La Condamine, he is more moderate in his language.

As a scientific character, Bouguer must stand in the first rank of utility. The operations in Peru are among the first of their species, and the species one of the most difficult kind of scientific investigations.

BOUHOURS, DOMINIQUE, was born at Paris, 1628. He studied at the college of Clermont, professed with the Jesuits at sixteen years of age, and was appointed by that society to read lectures in the Belles Lettres and rhetoric, both at Tours and at Paris. A heavy infirmity soon disqualified him from the task, and he was compelled by the recurrence of grievous headaches to embrace an occupation apparently just as ill-adapted as that which he quitted to relieve his peculiar complaint. He entered upon the tuition of the sons of Henry, duc de Longueville. That nobleman, who regarded him with singular affection, died in his arms, and Bouhours published an account of his illness and last moments, Paris, 1663. His second publication was *Histoire de Pierre d'Aubusson, Grand Maître de Rhodes*, 8vo., 1667, which has been translated into English. He was then engaged on a commission to the Roman Catholic refugees from England to Dunkirk ; and was introduced to the substantial patronage of Colbert by two critical works, *Remarques et*

Doutes sur la Langue Française, and *Les Entretiens d'Ariste et d'Eugène*, 1671. In the latter occurs a question most offensive to German national pride, 'Whether it be possible for a German to be a wit?' These works awakened a host of critics. Baillet affirmed that few exceeded Bouhours in knowledge of French *stiles et des locutions* : and the *Jugemens des Savans* contain more than one very favourable opinion from the censors of Trevoux. Ménage, on the contrary, stated that Bouhours wrote with politeness, but without either judgment or learning ; that he was unacquainted with Greek and Hebrew, scholastic divinity, and canon law ; that he had not read the fathers, the councils, nor ecclesiastical history ; that he was but a poor grammarian in his native tongue, and the most ignorant person in the world as to the general principles of grammar ; that his *Doutes* contained more faults in language, learning, and judgment, than they filled pages ; that he had never read the bible ; that he was unversed in Italian, concerning which he made great parade ; was an unskilful etymologist, and an unsound logician. Notwithstanding this most cutting and ferocious declamation, it is said that Bouhours cultivated and enjoyed the friendship of Ménage ; and Colbert certainly assigned to him the education of his son, the Marquis de Seignelai. His other chief works were *Dialogues sur la manière de bien penser dans les Ouvrages d'Esprit*, 1687, in which the interlocutors Eudoxe and Philanthe address each other in a strain of adulatory compliments little suited to the investigation of truth. Voiture is the hero of the piece, and Rapin is extolled as fully equal to Virgil. This false criticism received a very severe handling from Barbier d'Aucour, the writer of *Les Sentimens de Chante*, 2 vols., 1671-2, in La Harpe's opinion the only polemical tract, excepting *Les Provinciales* of Pascal, which ever was worthy of more than temporary reputation. In 1683 Bouhours published a *Life of Ignatius*, and not long afterwards one of *Francis Xavier*. The latter is chiefly remarkable as having been selected for translation by Dryden soon after his profession of the Romish faith. Xavier was the saint, to whose prayers Ann of Austria believed that she was indebted for her son, Louis XIV., after twenty years of barrenness ; and Dryden, in his Preface to *Mary of Esté*, states that the queen of England in like manner has chosen the apostle of the Indies as 'one of her celestial patrons.' A judicious abridgment of the *Life of Xavier*, excluding all that is incredible, profane, trivial, and absurd, but fully exhibiting the heroic self-devotion, the courage, the patience, the acuteness, and the perfection of the indefatigable missionary, would be a work of deep interest, and we think, of not a little utility. Bouhours published in 1697, a French translation of the Vulgate New Testament, in which he is confessed on all hands to have failed. Some minor devotional pieces may be added to the list of his writings. He died in the college at Clermont at Paris, May 27, 1702, in the 74th year of his age.

BOULLAUD, or BOULLIAU, latinized BULLIADUS (ISMAEL), born at Loudun, Sept. 28, 1605, died Nov. 25, 1694, at Paris. He was originally a Protestant, but became a Roman Catholic, and retired into the Abbey of St. Victor, at Paris. He travelled in various parts of Europe in the service of John Casimir, king of Poland. Nothing more of his life is remembered ; but such of his works (which were many, see the *Biogr. Univ.* and Lalande *Bibliogr. Astron.*) as by themselves or their consequences entitle him to a place here, are in the following list. Boullaud was a combination of a fanciful speculator and a hard-working calculator, a good scholar, and well versed in the history of astronomy. His notion that light is a sort of substance intermediate between mind and matter entitles him to the first appellation, and his *Philolaic astronomy* to the rest.

The earlier followers of Copernicus were accustomed to rank themselves, and to be considered by others, as followers of some one or other among the antients who advocated, or were supposed to have advocated, the motion of the earth ; either Pythagoras, Aristarchus, or Philolaus. The first work we shall notice of Boullaud is his *Philolaus, seu de vero Systemate Mundi*, 1639. After this he gave an edition of Theon of Smyrna, 1644, and in the following year his *Astronomia Philolaica* (in his own catalogue of De Thou's library he calls it *Astrologia*), which contains : 1. *Prolegomena* on the history of astronomy, which are often cited, and are the basis of several facts. 2. An exposition of a system of astronomy, which is Copernican as to the annual

motion of the earth and Ptolemaic as to the diurnal motion, and the precession of the equinoxes. It is throughout an attack upon the laws of Kepler, of which he only admits that which asserts the planets to move in ellipses. Each ellipse he treats as the section of an oblique cone, one of the foci of which is in the axis, (the sun being in the other focus,) and he asserts that the planets describe equal angles in equal times round the axis, or rather that a plane passing through the planet and the axis describes equal angles in equal times. The celebrated hypothesis of Dr. Seth Ward consists in supposing the planet to describe equal angles in equal times about the focus in which the sun is not. Both hypotheses are very nearly true for ellipses of small eccentricity, and of the two, that of Bouillaud is said to come a little nearer. Seth Ward replied to Bouillaud in his *Idea Trigonometria Demonstrata*, &c. Oxford, 1654, and the latter rejoined in a tract entitled *Astr. Phil. fundamenta clarius explicata*, Paris, 1657. 3. A set of tables, styled *Philolactæ*, calculated for the meridian of Uraniburg (Tycho Brahe's Observatory). Bouillaud here makes use of various Arab observations detected by himself in the *Bibliothèque Royale*. It must also be noticed that he was the first who disinterred the observations of Thius [ASTRONOMY, vol. ii. p. 532]. These tables have received great praise, and are not without their merits: but most of their value consists in what is taken from Kepler's methods, or from the Rudolphine Tables.

Bouillaud imagined that the laws of the planetary motions could be entirely deduced from geometrical reasoning. He blames Kepler for attending to any other method of determining a law. But still he had the good fortune to make a guess, which, had he been Newton, would not have lain idle in his hands. He asserts, in opposition to Kepler, that the law of the attracting force of the sun, if such a thing be, cannot be inversely as the distances, but *inversely as the square of the distances*. He is thus the first who started this notion. He has certainly the advantage of Kepler in another point, when he asks why the sun only attracts the planets, and why the planets only resist motion, and do not produce it. As the first sentence in which the law was (though but as a supposition) announced, which has since been found to regulate the motions of all the planets, must be a curiosity, we shall give it at length from p. 23 of *Astr. Phil.* 'Virtus autem illa, quæ sol prehendit seu harpagat planetas, corporalls quæ ipsi pro manibus est, lineis rectis in omnem mundi amplitudinem emissa quasi species solis cum illius corpore rotatur: cum ergo sit corporalis, imminuitur, et extenuatur in majori spatio et interuallo, ratio autem hujus imminutionis eadem est, ac luminis, *in ratione nempe duplâ interuallorum, sed eversâ*. Hoc non negauit Keplerus, attamen virtutem motricem in simplâ tantum ratione interuallorum contendit imminui: &c.

We shall also mention of Bouillaud his *Opus novum ad Arithmetica institutorum*, Paris, 1682, which is a continuation of the researches contained in the *Arith. instn.* of Wallis, but not applied to geometry: and also his *Catalogus Bibliothecæ Thuanæ*, made by him in conjunction with James and Peter Dupuis (Puteanus), Paris, 1679. This is an excellent representation of the state of a library of the time, and we shall have frequent occasion to quote it. (*Biog. Univ.*, Life by Delambre, and Delambre *Hist. Ast. Mod.*)

Among the tables of the *Astronomia Philolactica* are the Rudolphine catalogue of stars; the catalogue of southern stars furnished to Bayer by Americus Vesputius and others, sent to Kepler by Bartschius from Bayer's manuscripts; and some Persian tables brought into Europe by George Chrysococca.

BOUILLON, the capital of an antient duchy of that name, now forming part of the prov. of Luxembourg, is situated on the left bank of the river Semoy, and 14 m. from its junction with the Maese, in 49° 48' N. lat., and 4° 59' E. long. The duchy is on the W. side of Luxembourg, between it and Champagne, and under the French empire was included in the dep. of the Sambre and the Maas. It is a hilly district lying in the middle of the Ardennes.

Bouillon is a small neatly built town and contains about 2500 inh. It has two communal schools, in which 178 boys and 160 girls are instructed. The castle of Bouillon, which was formerly thought to be impregnable, is built upon a steep rock overlooking the town, but is itself commanded by the neighbouring hills.

The town and duchy of Bouillon were the hereditary possessions of Godfrey, the leader of the first crusade and king

of Jerusalem, which city he took in 1099. To provide funds for his expedition, Godfrey sold the duchy to Albert, bishop of Liège, subject to the right of redemption on the part of the vendor or his immediate heirs. Godfrey having died in the Holy Land, this sale became the cause of disputes between his heirs and the bishop, each party having recourse to arms in support of their pretensions. After this petty war had been renewed at so many different times as to obtain for the duchy the name of 'The debateable land,' it remained for some time in the peaceable possession of the prince Bishop of Liège. The bishop having taken part in the war against France, Louis XIV. caused the town and castle of Bouillon to be seized in 1672, and at the congress of Nimeguen in 1678 stipulated that France should retain possession, until arbitrators to be appointed for the purpose should have decided between the claims for the duchy set up by the descendants of the heirs of Godfrey and the Bishop of Liège. In the meanwhile Louis had invested the family of La Tour d'Auvergne with the duchy. A descendant of that house, Philip d'Auvergne, a captain in the English navy, assumed in 1792 the title of Prince of Bouillon, which he continued to bear until his death in 1816. The long disputed territory was adjudged by the congress which met at Vienna in 1815, to belong to the king of the United Netherlands, in his quality of duke of Luxembourg: in the division of that duchy consequent upon the revolution of 1830, Bouillon fell to the share of Belgium.

Bouillon is 45 m. W. from Luxembourg, and 6 m. N.N.W. from Sedan, the French frontier being about midway between Sedan and Bouillon. (Gautier's *Voyageur dans les Pays-Bas*; Kampen; *Recueil*, &c., par Van der Maelen.)

BOUILLON, GODFREY (GODEFROY), DUKE OF, in the Ardennes, was the eldest son of Gustavus II., count of Boulogne, a descendant by the female line from Charlemagne, and of Ida, sister of Godfrey le Bossu, duke of Brabant, and Basse-Lorraine. The date of his birth is not given, but the marriage of his parents took place in December, 1059. In his youth, Godfrey bore the great standard of the empire in the service of Henry IV. At the battle of Merseberg, October 2, 1081, his sword sheared off the right hand of the Pretender Rodolph, who died on the following day in consequence of his wound; and Godfrey, whose distinguished bravery had been rewarded by the ducal title, was among the first who scaled the walls of Rome in the subsequent attack upon it. It is believed that remorse for the violation of the holy city of the west occasioned his vow of joining in the crusade which was to rescue the still more holy orient. metropolis. His celebrity in arms, his noble descent, and his general high reputation for both morals and valour, readily procured him the chief command of the projected expedition; and 80,000 foot and 10,000 horsemen were placed under his immediate orders by the confederates. His gathering was formed on the banks of the Meuse and of the Moselle, and thence he advanced through Germany, Bohemia, and Hungary. By discretion, and by fearlessly trusting himself to the good faith of Carloman, king of the long-named country, he removed the suspicions which had been justly excited in that prince and his subjects by the licentiousness of former pilgrims; and after a short delay, he was greatly assisted in his march upon the Saracens by an escort of Hungarian cavalry. In union with the other divisions of the Latin army under the towers of Constantinople, he was employed in dispelling the not unreasonable jealousy displayed by the Emperor Alexius; and afterwards, by the capture of Nicæa and by retrieving the battle of Dorylæum, he opened the passage through Asia Minor. Antioch next fell before his arms, but not until it had detained him many months and had occasioned fearful loss. Among the prodigies of valour (and the phrase, however common-place, may here be received in its literal sense) which the original historians of the crusades delight to record of their heroes, is an instance that Godfrey, on one occasion, during the siege, by a single stroke of his sword, split a Saracen from the left shoulder to the right haunch, and that the entire head and a moiety of the trunk of the Infidel fell upon the spot into the river Orontes, while the sitting half entered the town on horseback. In May, 1099, the crusaders advanced from Antioch and Laodicea to Jerusalem, but of their own mighty host scarcely 40,000 men remained alive, of whom one-half was unfit for combat. Godfrey, while pursuing the hazardous diversion of the chase during his march through Pisidia, had been torn by a wild boar, and so greatly was he injured in this rough encounter,

that a litter became necessary for his conveyance over Mount Taurus. On arriving at Jerusalem he encamped his division on Mount Calvary, and after five weeks of severe struggle and acute suffering, the Holy City was carried by storm on July 15, 460 years after its conquest by Omar. Three days of unsparring butchery succeeded this brilliant triumph, during which the exertions of Godfrey were wholly inadequate to restrain the lawless passions of the soldiery flushed with victory. The unanimous voice of the Christian army, after much intrigue, proclaimed him first Latin King of Jerusalem; but his piety and modest forbearance rejected the title; and even when in the end he consented to assume the inferior style of 'Defender and Baron of the Holy Sepulchre,' he persisted in refusing to wear any diadem in that city in which his Redeemer had been crowned with thorns. He secured himself in the government to which he had been thus honourably elevated, by totally overthrowing the myriads brought against him by the sultan of Egypt, at Ascalon, Aug. 12, 1099. With the assistance and advice of those pilgrims who were best skilled in European jurisprudence, Godfrey compiled and promulgated a code named *Les Assises de Jerusalem*; which, as finally revised towards the close of the fourteenth century for the use of the Latin kingdom of Cyprus, is printed in old law French in Beaumanoir's '*Coutumes de Beauvoisais*.' Bourges and Paris, 1690. Godfrey died in the year 1100, after much too short a reign for the glory and happiness of his newly-established kingdom. His virtues and talents are now chiefly remembered by the glowing eulogy of Tasso; but they are fully avouched by the concurrent testimony of historians frequently differing on other points.

BOULAC. [CAIRO.]

BOULAINVILLIERS, HENRI DE, Count of St. Saire, in Normandy, was of an antient and noble family, of Picard extraction. He was the eldest son of François, Count of St. Saire, and of Susanne de Manneville; born at the place from which he derived his hereditary title, October 21st, 1658. He studied at St. Julien, where he particularly addicted himself to the somewhat dry pursuit of genealogical history. After a short period of military service, embarrassed family circumstances, arising chiefly from an imprudent second marriage which his father contracted late in life, induced him to quit the army, and to live upon his estates in retirement. His time was devoted to literature; but none of his writings were published from his own MSS. till after his death, which took place on January 23rd, 1722. His works on different portions of the feudal history of his own country occupy three volumes folio, and are characterised by the President Hénault to be so rigidly framed on a false system, as to permit their author to appear '*ni bon critique, ni bon publiciste*.' Montesquieu and Voltaire however give a more favourable judgment. A marked antipathy to revelation pervades his writings, and exhibits itself in singular contrast with a superstitious reverence for judicial astrology, and the mystic sciences, which he cultivated with much diligence. A *Life of Mohammed* extends only to the Hegira, and represents him as a blameless hero. Languet du Fresnoy committed to the press the MS. of the treatise which is called *Réfutation des Erreurs de Benoit de Spinoza, par M. de Fénelon, Archevêque de Cambrai, par le Père Louis Bénédicte, et par M. le Comte de Boulainvilliers; avec la Vie de Spinoza, écrite par Jean Colerus, ministre de l'Eglise Luthérienne à la Haye, augmentée de beaucoup de Particularités tirées d'une Vie manuscrite de ce philosophe faite par un de ses amis* (Lucas, a physician, Brussels, 1731, 8vo). The tract, instead of being, as its title imports, a refutation of Spinoza, is an arrangement and a defence of his materialism. In the well-known letters on the Parliaments of France, which were translated into English, the author shows clearly that he was fully aware of the defects of the political system of France, as exhibited in the want of an efficient national legislature.

BOULEVARD, or BOULEVART, a French word corresponding to our own terms bulwark and rampart, the former of which is obviously akin to the French 'Boulevard.' The word, according to Ducange, is an altered form of Bourgward, the territory of a Bourg, or collection of houses. It is applied to all the space occupied by a bastion or curtain; (*Dict. de l'Acad.*) and also to the promenades which in some French towns have been formed on the site of fortifications now demolished. Thus the promenades which surround the city of Bourges have the title of 'Les Boulevards Villeneuve.'

The boulevards of Paris form a remarkable feature of that capital. Those on the N. side of the Seine form a continuous line of wide street or road, planted on each side with elm-trees; approaching in form to a semicircle or rather a semi-ellipse, and extending in length to nearly three miles, from the church of La Madeleine to the site of the Bastille. They are about midway between the river and the wall of Paris, which again is surrounded by a road planted with trees, and called 'Boulevards Extérieurs;' but these are not worthy of much notice. They abound with places of amusement for the working classes of Paris; and as the duty on wine is not paid except it is actually conveyed within the barriers, all the cheap wine-shops are on these boulevards, which are not generally inviting as a mere promenade.

The boulevards on the S. side of the Seine are planted and laid out like those above mentioned, but are more extensive, and approach in some places close to the wall and coincide with it. The length of these is perhaps between four and five miles. The N. boulevards are distinguished by the magnificence of their buildings, the shops, cafés, hotels, and places of public amusement which adorn them, and the gay multitude by which they are thronged. The S. boulevards are less frequented by the Parisians.

These boulevards are on the site of the walls of Paris demolished by Louis XIV. (*Paris and its Historical Scenes in the Library of Entertaining Knowledge.*)

BOULOGNE, or, as it is sometimes called, to distinguish it from other places of the same name, BOULOGNE-SUR-MER (i. e., on the sea), a sea-port and town of France, in the dep. of Pas de Calais. It lies about 10 or 11 m. S. of the Cap de Gris Nez, and at the mouth of the little river Liannes or Liane, which falls into the English Channel and forms the har.: it is 131 m. N. by W. of Paris in a straight line, or 137 m. by the road through Beauvais, Abbeville, and Montreuil; in 50° 44' N. lat. and 1° 35' E. long.

Boulogne is a place of great antiquity. It was in the country of the Morini, a tribe of the Belgæ, and was known to the Romans by the name of Gesoriacum, according to the testimony of Mela, a geographer who flourished in the time of the Emperor Claudius. The manner in which Mela speaks of it implies that it was of Gallic origin; and it was in his time the place of greatest note on that coast.* Some writers, and among them Montfaucon, Cluverius, Sanson, and Le Quien, have endeavoured to show that Boulogne was also the Portus Itius, from which Julius Cæsar embarked for Britain, in his first (according to Strabo) and second expeditions to that island; but their opinion is rejected by D'Anville, who agrees with Du Cange, and with our own antiquary Camden, in fixing the Portus Itius at Witsand or Wissan, a small town near Cap de Gris Nez. Gesoriacum became, under the Romans, the chief port of embarkation for Britain: here, D'Anville thinks, was the tower erected by Caligula, when he marched to the coast of Gaul in order to invade Britain; and the Emperor Claudius, according to Suetonius, embarked here for that island. The port in Britain with which a communication was chiefly maintained was Rutupis, now Richborough, near Sandwich. About the time of the Emperor Constantine, the name of Bononia was substituted for that of Gesoriacum, and the latter is not used by Ammianus Marcellinus, Eutropius, and other writers of a later period. In the *Notitia Provinciarum Galliarum*, subjoined to the Itinerary of Antoninus, mention is made of the Civitas Bononensium as distinct from the Civitas Morinorum, which indicates that the country of the Morini had been divided between two communities, of one of which Bononia was the capital.

When, in the latter part of the third century, Carausius was proclaimed emperor by the legions in Britain, he possessed himself of Bononia, which appears to have been one of the Roman naval stations, for Carausius, before his revolt, had been directed to fit out from it a fleet to clear the sea of pirates. This town was in consequence besieged by the Cæsar Constantius Chlorus, father of Constantine the Great. The siege, which ended in the capture of the town, was the occasion of serious detriment to it. In the fifth century Bononia is said to have been unsuccessfully attacked by Attila king of the Huns; and in the ninth century it was

* The words of Mela are '*perinetque (frons litorum) ad ultimos Galliarum gentium. Morinos, nec portum quem Gesoriacum vocant qualem notius habet*—(Lib. iii. c. 9. edit. Abr. Gronovii); and the face of the shore reaches to the country of the Morini, the most remote of the Gallic nations; and there is nothing on it better known than the harbour, which is called Gesoriacum.'

laid waste by the Northmen, who had landed just by (D'Anville; Expilly, *Dict.*) From the discovery of a ring to which the cables of vessels were fastened, it is thought that the sea flowed up as far as the present upper town of Boulogne, in which case Gesoriacum must have been at the bottom of a small bay.

Several Roman antiquities have been discovered at Boulogne; among these are medals and tombs. During 1823, 1826, and 1827, several tombs were discovered. Those discovered in 1823 were close to the sea; those discovered in 1826 and 1827 were a little out of the town, on the right of the road to Paris. The coffins in these last-mentioned tombs were ranged in regular order, and the bones (some of which bore the marks of deep wounds) were in good preservation. Several wells, a Roman road, and the foundations of what was considered to be a votive altar, were discovered at the same place; also many vases of different forms, and a great number of medals. Similar discoveries had been made before. On a cliff near the entrance of the port there stood a tower, which tower D'Anville considers to be one built by Caligula, as mentioned above. It was an octagon, and each side is said to have been about 24 or 25 French (equal to 25½ or 26½ English) ft. (at the base we presume), and it rose to the height of 125 ft.* It had twelve stages or floors, and the diameter of the tower appears to have diminished 3 ft. at each stage, so as to form so many external galleries of a foot and a half in width, going all round the tower. On the top of the tower lights were placed, so that it served as a light-house to vessels navigating the channel. The tower was built in a manner somewhat similar to that of the Palais des Thermes, a Roman edifice at Paris. It was built with iron grey-stone, three tiers together, succeeded by a double tier of a yellow stone of a softer texture, and on this a double tier of very hard and red bricks. At the time of its erection it stood more than a bow-shot from the sea, but the cliff was so much excavated by the waves, and fell in so far, that the tower was at last undermined and overthrown in the year 1644. It had been repaired by Charlemagne in the early part of the ninth century; and when the English were in possession of Boulogne they surrounded this tower with a wall and towers, so as to convert it into a donjon or keep of a fortress. These walls and towers shared the fate of the original Roman work in being overthrown by the advance of the sea. The tower was named in the middle ages 'Turris ordans' (supposed to be a corruption of *ardens*, burning) or *ordensis*; and it is still spoken of as the Tour d'Ordre. There were in the middle of the last century some ruins of the Roman walls, built of the same materials as the above-mentioned towers.

In the year 1231 Philippe of France, son of the King Philippe Auguste, caused new walls to be built inclosing a smaller space than had been occupied by the Roman town. This inclosure was that of the upper town (as it is now termed) at the eastern angle of which a citadel or castle was built by the same Philippe. Boulogne had before this time been erected into a county, of which he had acquired possession by marriage. Boulogne now became a frontier fortress, and resisted various attacks made upon it. In 1544 it was however taken by the English under King Henry VIII., owing to the cowardice of the governor (according to Expilly) who refused to comply with the entreaties of the more gallant townsmen to hold out. The English monarch set himself to strengthen the town by every means in his power: he fortified the Tour d'Ordre, as already noticed, ordered another fort to be built between that and the town called *la Maison Rouge*, and some others in different places. But by treaty, in 1550, Edward VI. of England restored Boulogne to France. While Boulogne was in possession of the English Henry II. of France built two forts very near the town in order to straiten and annoy the garrison.

After the recovery of the place from foreign dominion, the lower town, which had risen as a suburb of the upper town, on the side next to the riv., was surrounded by walls and the upper town strengthened by towers and other new works; but in 1687, by order of the king, the towers were blown up, and there remained to the upper town only the wall which encircled it, the castle, and one boulevard or bulwark; and to the lower town only a portion of its wall. The walls of the upper town are still standing: they are planted with a double row of trees, and afford a delightful promenade, commanding a view of the lower town, the sea,

We are not sure whether these are French or English feet.

and in fine weather of the coast of England. There are three gates by which to enter the town. The walls of the lower town have been destroyed. The citadel or castle, which yet remains, is used as an armoury and barrack, and its vaults are converted into a powder magazine.

At the commencement of the present century Boulogne rose into celebrity from its having been made by Napoleon the central rendezvous of the 'Grande Armée,' which he had assembled avowedly for the invasion of England. The preparations of the French ruler were on a vast scale; nearly 200,000 men were collected and encamped on the neighbouring heights; towers were erected and cannons mounted along the coast, and a numerous flotilla filled the port. This armament had been commenced before the short peace of Amiens; and an unsuccessful attack had been made by an English fleet under Nelson on the French flotilla on the night of the 15th August, 1801. On the rupture of the peace the flotilla and town again became the objects of attack, and on the 10th August, 1804, Admiral Keith made an attempt as unsuccessful as that of Nelson had been. The plan of invasion was however broken through by the defeat of the combined Spanish and French fleets off Ferrol by the English under Sir Robert Calder, 22nd July, 1805, and by the coalition of England, Russia and Austria against France. The army encamped about Boulogne was suddenly marched to the Rhine, and Boulogne sunk again into the comparative obscurity from which these mighty preparations had raised it. The column, the erection of which was commenced by the army in honour of the emperor, perpetuates the memory of this armament.

Since the peace of 1815 Boulogne has much increased in extent and population, and also much improved in its general appearance. It is much resorted to as a bathing-place, and many English families have made it their permanent residence. In 1815 it had only 13,000 inhabitants; the returns of 1832 give 20,856, and the guide books of two or three years later 25,000.

The town is on the right bank of the Lianne, the course of which is here to the N.W. The upper town, which approaches to the form of a parallelogram, the direction of whose sides is N.E. and S.W., and N.W. and S.E., and has the old castle at its eastern angle, is about a quarter of a mile from the riv. This is the most ancient part of Boulogne, and has narrow irregular streets, but good houses. The lower town extends along the riv. nearly to its mouth, and occupies the space between the riv. and the upper town. This part is regularly built; there is a kind of suburb called *Capécure*, on the left bank of the Lianne, which has been lately added to Boulogne by an edict of the king. The lower town is much larger, more populous and more commercial than the upper town, and contains the greater part of the public buildings. The supply of water, which is not of good quality, is by means of fountains, of which there are five in the upper and twelve in the lower town: the latter are supplied from a reservoir near the column of Napoleon. Arrangements have been made, and are probably by this time nearly completed, for lighting the town by means of gas. There are promenades on the ramparts of the upper town; and there is an open space, called the *Tinterelles*, on the N. side of the town, a neighbourhood adorned with new streets and elegant houses. The sands are of considerable extent, and form an excellent promenade at low water.

Among the principal public buildings of the upper town are the *Hôtel de Ville* or Town Hall, behind which is an ancient tower, the *Beffroi* (belfry), formerly belonging to a larger building of which it is the relic; the *Palais de Justice*, where the courts of law sit; an ancient episcopal palace, now used as a boarding-school, and the *Maison d'Arrêt*, or prison. Besides these are some religious establishments. In the lower town are—the *Hôtel de ville* of the Sub-prefecture; the building formerly a seminary of the priesthood and now occupied by several institutions for the promotion of science; the barracks; the hospital; and a building lately erected for various charitable purposes.

There are in Boulogne two churches and three convents for nuns, the most considerable of which is that of the *Sœurs Grises* (Grey Sisters) containing about seventy nuns, a British Episcopal chapel and one British Wesleyan chapel. There are several charitable institutions: the hospital contains above 200 inmates, aged and infirm persons, and founding or orphan children; and there are nearly 300 children (foundlings) under 12 years of age at present.

in the country: an infant asylum for children from 18 months to 6 years, provides for 120 young children of destitute parents. There is a humane society for the recovery of drowned persons. There are two girls' free-schools, managed by the *Sœurs Grises*, and attended by about 750 children; elementary free-schools for about 1200 boys under the direction of the *Frères de la Doctrine Chrétienne*; a Lancasterian free-school; a free-school for navigation, and two or three institutions which may be described as schools of industry. There does not appear to be any *Collège Royal* or high school at Boulogne, but there is an abundance of private seminaries both French and English; and there are academies for music and drawing, in which gratuitous instruction is given. There is a museum of natural history, antiquities, objects of art, &c.; also a good public library of above 22,000 volumes and 300 MSS.: an agricultural society, a society of the friends of the arts, and a philharmonic society. Of places of amusement may be mentioned the theatre, and the splendid bathing establishment, comprehending reading, music, assembly and card rooms. Horse-races have just been established, and balls; fairs, and several fêtes in the neighbourhood called *Ducasses* fill up the circle of amusements.

The har. of Boulogne has been much improved of late years, but is still difficult of access, and has not water enough when the tide is out. It consists of the channel of the riv. Lianne, and of a semicircular basin on the left bank of the riv. At low water the vessels rest in the mud, through which the stream finds its way to the ocean. From the mouth of the riv. two piers are carried out about 2000 ft. into the sea. The trade of the town is considerable and is increasing. The fisheries are important. The herring and mackerel seasons call into employment a considerable capital, and several vessels are fitted out for the Newfoundland cod fishery. The fishermen form a peculiar class in society, and their customs, dress, language and habits remain almost the same amidst the changes which the intercourse with foreigners has been working in other classes. They are very superstitious.

Before the Revolution Boulogne was the seat of a bishopric, erected in the 16th century from part of the former diocese of Therouenne. It has now again lost its episcopal rank. The cathedral, which was destroyed in the Revolution, was considered one of the most ancient religious edifices in France. Before the Revolution were some monasteries now suppressed.

Boulogne was the birth-place of Thurot, an eminent French naval officer: Le Sage, the author of 'Gil Blas,' and the English poet Churchill died here.

Boulogne is the capital of an arrond. which contains 348 sq. m., and is subdivided into six cantons and 100 communes. The inhabitants, by the census of 1832, were 98,099.

About a mile from Boulogne on the Calais road is the column voted by the grand army to Napoleon as an expression of their esteem and admiration. It was also designed to commemorate the institution of the Legion of Honour. Each soldier contributed a portion of his pay, and the first stone was laid by Marshal Soult; but the work was not finished till the reign of Louis XVIII., when the monument was perverted from its original purpose, being made to commemorate the return of the Bourbons, and in place of the statue of Napoleon, by which it was to have been surmounted, a gilt globe, adorned with fleurs de lis, has been substituted. It is now however likely to be restored to its original purpose of a monument in honour of Napoleon, and the present government of France has promised to furnish the bronze for the intended statue. The column is of the Composite order, above 160 English ft. high, and more than 13 in diameter. There is a staircase within by which visitors ascend to an iron gallery round the ball which surmounts the column, from which gallery is a very extensive prospect. The column is composed of marble from the quarries of Marquise in the neighbourhood. In the environs of Boulogne is the botanical garden, formed in 1784 by the Baron de Courset, considered to be one of the finest and most extensive in France. It contains a numerous and beautiful collection of plants, and is much visited by the inhabitants or visitors of Boulogne.

BOULOGNE, a village in the immediate neighbourhood of Paris, to the S.W. of that city, is upon the right bank of the Seine, and just opposite St. Cloud. It was formerly called Menus. About the fourteenth century a brotherhood was formed here in honour of the Virgin by some

inhabitants of Paris who had returned from a pilgrimage to Boulogne-sur-Mer. The chapel built by the brethren of this community became crowded by the devotees from Paris, and the vil. acquired the name of Boulogne, from the pilgrimage which its founders had undertaken. The pop. of the com. was, in 1832, 5391; of the vil. itself, 5210. Between Paris and the vil. of Boulogne extends the Bois de Boulogne, an extensive wood intersected in all directions by alleys and roads. Many of the fine trees which once adorned it have been cut down, and it is now merely an extensive copse thinly scattered with young plants. Much of the wood was destroyed by the Prussians, when they had their camp here at the close of the late war. In passion week, the wood is the scene of an annual procession, formerly partaking of a religious character, but now formed of little else than a string of vehicles filled by people desirous of being as gay and merry as possible.

In the Bois de Boulogne were three *Châteaux* belonging to the royal family. That of *Muette*, which was frequented by Louis XV., is close to the vil. of Passy. The *Château de Mudrid* is said to have been built by Francis I. after his return from captivity. This was destroyed at the Revolution; of the present condition or use of the *Château de Muette* we have no late account. The third château is that of *Bagatelle*, built by the ex-King of France, Charles X., while Count d'Artois; and occupied, after the restoration of the Bourbons, by his son the Duc de Berri. The inscription over the portal, *parva sed apta* 'small but convenient,' gives the true character of the place. (*Planta's Picture of Paris*).

BOULONNOIS, a district in the former prov. of Picardie, deriving its name from its capital Boulogne-sur-Mer, now forming part of the dep. of Pas de Calais. The climate is rather cold, but the land is fertile in grain, and affords pasturage to a great number of cattle, from whose milk good butter is made. Some coal is dug, and there are mineral springs. The Boulonnois was bounded on the N. by the district in which Calais is situated, called the *Pays Reconquis*, on the E. by Artois, on the S. by Ponthieu, and on the W. by the sea. It formed part of the country of the Morini, a Belgic tribe. It appears to have become an hereditary co. in the 9th century, and underwent various changes; but its history does not present any points of interest. It was re-united to the crown by Louis XI. (*Expilly, Dict.*)

BOULTON, MATTHEW, was born Sept. 3rd, 1728, at Birmingham, where his father carried on the business of a hardwareman. He received an ordinary education at a school at Deritend; and also acquired a knowledge of drawing and mathematics. At the age of seventeen he effected some improvements in shoe-buckles, buttons, and several other articles of Birmingham manufacture. The death of his father left him in possession of considerable property; and in order to extend his commercial operations, he purchased, about 1762, a lease of Soho, near Handsworth, which though only two miles from Birmingham, is not in the same county, but in Staffordshire. It would scarcely be possible to select a more striking instance of the beneficial changes effected by the combined operations of industry, ingenuity, and commerce, than that which was presented by Soho after it had been some time in Mr. Boulton's possession. It had previously been a bleak and barren heath, but was soon diversified by pleasure grounds, in the midst of which stood Mr. Boulton's spacious mansion, and a range of extensive and commodious workshops capable of receiving above a thousand artisans. These workshops were described by a tourist (Warner), thirty-five years ago, as being equally striking both for their neatness and magnificence. In 1797 Mr. Boulton purchased the fee-simple of this estate with a considerable portion of land adjoining.

To Mr. Boulton's active mind this country is eminently indebted for the manner in which he extended its resources, and brought into repute its manufacturing ingenuity. Water was an inadequate moving power in seconding his designs, and he had recourse to steam. The old engine on Savary's plan was not adapted for some purposes in which it was requisite that great power should be combined with delicacy and precision of action. In 1769 Mr. Boulton having entered into communication with Watt, who had obtained a patent for some improvements in the steam-engine, Watt was induced to settle at Soho. In 1775 parliament granted him a farther extension of the privileges of his patent for improvements in the steam-engine; and on his entering into partnership with Mr. Boulton, the Soho

works soon became famous for their excellent engines. Dr. Ure remarks (*Philosophy of Manufactures*, p. 29) that there are many engines made by Boulton and Watt forty years ago, which have continued in constant work all that time with very slight repairs. Not only was the steam-engine itself brought to greater perfection, but its powers were applied to a variety of new purposes. In none of these was the success so remarkable as in the machinery for coining, which was put in motion by steam. The coining apparatus was first put into operation in 1783, but it soon underwent important improvements, until it was at length brought to an astonishing degree of perfection. One engine put in motion eight machines, each of which stamped on both sides and milled at the edges from seventy to eighty-four pieces in a minute; and the eight machines together completed in a style far superior to anything which had previously been accomplished, from 30,000 to 40,000 coins in an hour. The manufacture of plated wares, of works in bronze, and *or moulu*, such as vases, candelabra, and other ornamental articles, was successively introduced at Soho, and the taste and excellence which these productions displayed soon obtained for them an unrivalled reputation in every part of the world. Artists and men of taste were warmly encouraged, and their talents called forth by Mr. Boulton's liberal spirit. The united labours of the two partners contributed to give that impulse to British industry which has never since ceased.

Mr. Boulton has been described by Playfair as possessing a most generous and ardent mind, to which was added an enterprising spirit that led him to grapple with great and difficult undertakings. 'He was a man of address' (continues the same writer), 'delighting in society, active, and mixing with people of all ranks with great freedom and without ceremony.' Watt, who survived Mr. Boulton, spoke of his deceased partner in the highest terms. He said, 'To his friendly encouragement, to his partiality for scientific improvements, and to his ready application of them to the purposes of art, to his intimate knowledge of business and manufactures, and to his extended views and liberal spirit, may in a great measure be ascribed whatever success may have attended my exertions.' Mr. Boulton expended about 47,000*l.* in the course of experiments on the steam-engine, before Watt perfected the construction and occasioned any return of profit.

Mr. Boulton died August 17th, 1809, in his 81st year. His remains were attended to the grave by several thousand individuals, to whom medals were given, recording the age of the deceased and the day of his death. The body was borne to the grave by the oldest workmen connected with the works at Soho, and about five hundred persons belonging to that establishment joined in the procession. Mr. Boulton left an only son, to whom the Soho works at present belong.

BOUNTY, a term used to signify a premium paid by government to the producers, exporters, or importers of certain articles, or to those who employ ships in certain trades. (*McCulloch's Dictionary of Commerce*.) A distinction must be made between a bounty and a drawback, which latter is not liable to the same objection as the former. Premiums given by the public to artists and manufacturers who excel in their particular occupations must also be regarded in a different light from bounties applied to the maintenance of particular branches of commerce. [**DRAWBACK; PREMIUM.**]

Perhaps the most objectionable and vicious mode of protecting the interests of commerce is by means of bounties. A tariff may be framed on such narrow and exclusive views as to be nearly as injurious to a country, but the evil consequences are less palpable; and hence bounties have ceased to be considered as advantageous to the general interest, while high or prohibitory import duties are more or less adopted by all commercial nations. The question of bounties and their impolicy is discussed by Adam Smith in his 'Wealth of Nations,' book iv. chap. 5; and the subject has also been treated in a very complete manner by the late Mr. Ricardo in his 'Principles of Political Economy and Taxation.' Postlethwaite, in his 'Dictionary of Commerce,' published in 1774 in two vols. folio, under the head 'Bounties,' refers to a work specially dedicated to this and similar subjects; and the reason he alleges for so doing is that 'they are so very numerous.' After the publication of Adam Smith's work bounties began to be regarded with less favour, and have at length sunk into complete discredit. They are now no more relied upon as a means of

furthering the true interests of commerce than the balance of trade, as it was termed, is regarded as an unfailing indication of the increase or diminution of national prosperity. With this latter notion, indeed, the policy of bounties was very materially connected. It was thought that they operated in turning the balance in our favour. Adam Smith remarks:—'By means of bounties our merchants and manufacturers, it is pretended, will be enabled to sell their goods as cheap or cheaper than their rivals in the foreign markets. . . . We cannot (he adds) force foreigners to buy their goods, as we have done our own countrymen. The next best expedient, it has been thought, therefore, is to *pay* them for *buying*.' Bounties in truth effect nothing more than this, and the chapter from which the above extracts are made affords the most satisfactory proofs of their impolicy. The propositions maintained are, that every trade is in a natural state when goods are sold for a price which replaces the whole capital employed in preparing and sending them to the market with something in addition in the shape of profit. Such a trade needs no bounties. Individual interest is sufficient to prompt men to engage in carrying it on. On the other hand, when goods are sold at a price which does not replace the cost of the raw material, the wages of labour and all the incidental expenses which have been incurred in bringing them into a state fit for the market, together with the manufacturer's profits; that is, when they are sold at a loss, the manufacturer will cease to produce an unprofitable article, and this particular branch of industry will soon become extinct. It perhaps happens that the general interests of the country are thought to be peculiarly connected with the species of industry in question, and that it therefore behoves government to take means for preventing its falling into decay. At this point commences the operation of bounties, which are devised for the purpose of producing an equilibrium between the cost of production, the market price, and a remunerating price, the last of which alone promotes the constant activity of every species of industry. Smith observes 'The bounty is given in order to make up this loss, and to encourage a man to continue or perhaps to begin a trade of which the expense is supposed to be greater than the returns; of which every operation eats up a part of the capital employed in it, and which is of such a nature, that if all other trades resembled it there would soon be no capital left in the country.' And he adds:—'The trades, it is to be observed, which are carried on by means of bounties are the only ones which can be carried on between two nations for any considerable time together, in such a manner as that one of them shall always and regularly lose, or sell its goods for less than they really cost. . . . The effect of bounties, therefore, can only be to force the trade of a country into a channel much less advantageous than that in which it would naturally run of its own accord.'

One of the most striking instances of the failure of the bounty system occurred about the middle of the last century in connexion with the white herring fishery. A joint stock company was created, with a capital of 500,000*l.*, for the purpose of vigorously prosecuting this branch of our fisheries; and though in addition to a bounty of 30*s.* a ton the Company was allowed an exportation bounty of 2*s.* 6*d.* a barrel, the delivery of British and foreign salt duty free, and though for every 100*l.* subscribed 3*l.* a-year interest was paid by the government, yet, in spite of such extraordinary encouragement, the greatest portion of the capital employed was lost. Individuals, for the sake of the bounties, rashly ventured into the business without a knowledge of the mode of carrying it on in the most economical and judicious manner.

The bounty on the exportation of corn was given up in 1815, and those on the exportation of linen and several other articles ceased in 1830. The following (*Government Official Tables*, p. 4) shows that bounties will probably soon cease to be considered as forming any part of our commercial policy:—

Bounties for promoting Fisheries, Linen Manufactures, &c. in the United Kingdom.

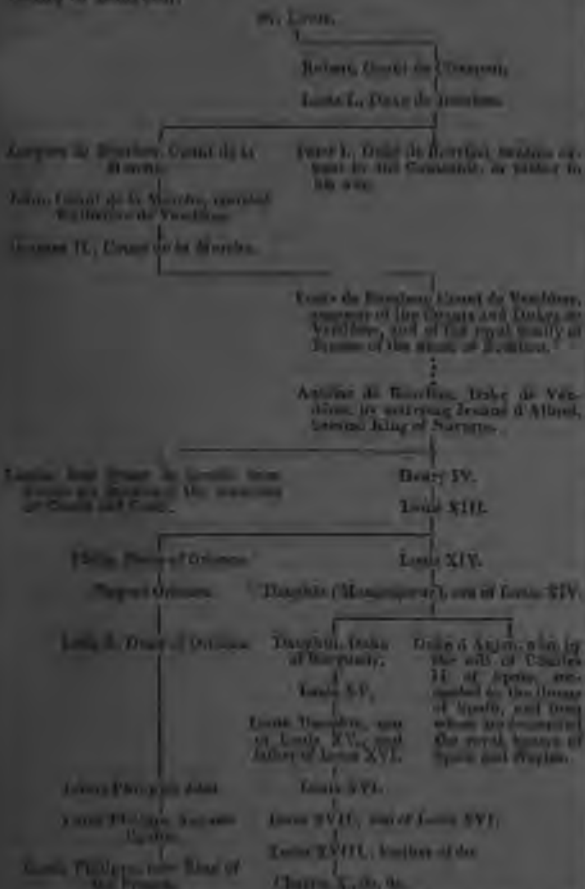
£. s. d.			£. s. d.		
1822	445,162	13 4	1828	273,269	14 10
1823	483,066	6 2½	1829	233,941	9 4½
1824	536,228	0 7½	1830	199,263	5 1½
1825	429,162	3 1½	1831	170,999	5 1½
1826	315,339	5 4	1832	76,572	3 0½
1827	294,208	10 6	1833	14,713	9 11½

COUNTY, MOUNTAIN OF THE. [Bourbon.]

COUNTY, QUEEN ANNE'S. [Bourbon.]

BOURBON, the name of a family that succeeded the line of Valois in 1589, and has reigned in France from 1589 to the present time, with some intermission during the regular and the empire of Napoleon Buonaparte. The families both of Valois and Bourbon, were branches of the stock of Capet. The Bourbons had descended first from the Valois; the former being descended from a son of St. Louis, the latter from a brother of Philip the Fair. The genealogy of the Bourbons, here given, is easily taken from the elaborate work of M. DEBOYSSIER, historiographer of the House of Bourbon, &c. &c. This work is *Les Bourbons, royaux*, and may be considered as an official document and the best authority on the points within its province. The following have also been consulted:—*Histoire des Bourbons*, 2 vols. Paris, 1793. *Mémoires de Racine de Courgenon, Avoué, et successeur de la famille Royale de Bourbon, Histoire de la Maison de France, à la Rochelle, 1797.* *Essai*—*Mémoires of the Kings of Spain of the House of Bourbon*. The ancestor of the Bourbon branch of the royal family of France was Robert the sixth and youngest son of Louis IX, commonly called St. Louis, a title which few of the succeeding saints have better earned, if the virtues of justice, temperance, and rigid piety confer a claim to that title.

Robert was born in 1242. In 1270 his father set out on his African expedition, where he perished before Tunis. Philip the Hardy, successor of St. Louis, gave Robert in marriage to Beatrice of Burgundy, a princess of the blood, only daughter and heiress of John of Burgundy, baron of Charolais, and of Agnes, dame de Bourbon and de St. Just, daughter of Artois, sister of Bourbon. By this marriage Robert came to his appanage of the Comté de Clermont, the province of the Bourbonnais, and the Charolais, and the seigniorie of St. Just. His descendants take the name of Bourbon.



In the time of Robert's son, Louis, the Bourbonnais was created into a *duché pairie*. The crown, therefore, assumed the title of duke de Bourbon, retaining the arms of France. *Duché pairie* at that time denoted very high power and dignity. At the time of this creation there were in France only the dukes of Burgundy, Artois and Brittany,

and the title of *pair* was only bestowed on the children of the king, the parents of the blood, and sovereigns of the most noble fiefs. A younger son of this Louis, duke de Bourbon, named Jacques de Bourbon, bore the title of Count de la Marche and de Vendôme. The daughter of Vendôme having come, as that of Bourbon, had some before to Robert, to the second Count of la Marche by marriage, his second son assumed the name of Bourbon Vendôme, and from first descended the royal house of France; the elder branch became extinct on the death of the famous Constable de Bourbon. The preceding table will convey as near a near distinct idea of the course of descent, and will give a synopsis and at the same time clear view of the lineage of the Bourbon stock, which have more immediately given kings in France. It has not been judged necessary to give all the counts and dukes de Vendôme. A blank has therefore been left between Louis de Bourbon, the first count de Vendôme, and Antoine de Bourbon, d'au de Vendôme, and king of Navarre, the father of Henry IV. of France.

BOURBON, CHARLES DE, Constable of France, commonly called the Constable de Bourbon, or the Constable Bourbon, was born on the 17th of February, 1597. He was of the Montpensier branch of the Bourbon family, being the second son of Gilbert de Bourbon, count de Montpensier, viceroy of the kingdom of Naples. By the death of his brother at the age of eighteen, he became the eldest son of his branch, on which the principal territories of the Bourbons was united. He was educated at Moulins, the palace of the eldest branch of his family, the dukes de Bourbon, situated in the centre of their large possessions. He was severely trained in all the athletic exercises, which were regarded as by far the most important part of the education of the nobility of his time. But while his physical education was thus attended to, he did not altogether neglect his mental; and the manner in which he received the lessons which were given him in the science of war, as far as it could then be called a science, gave indication of no inconsiderable capacity; while his general behaviour indicated more thought than could be expected from his years.

The last duke de Bourbon, Pierre II, died leaving a daughter, Suzanne de Bourbon, who had been betrothed to the duke d'Alençon. It being considered impolitic to allow so many domains to accumulate in the person of the duke d'Alençon, and there being also a doubt respecting Suzanne de Bourbon's title, Louis XII, appointed a commission, composed of princes, ministers, seigniors, magistrates of state, and lawyers, to examine the respective titles of Suzanne de Bourbon and the count de Montpensier. The commissioners reported that the right of Montpensier appeared indisputable, but they proposed to settle the dispute by marrying the two claimants. Louis XII, approved of the recommendation, and the marriage took place accordingly. It required small persuasion to reconcile the dowager duchess de Bourbon to this arrangement, for she was well aware, having herself presided over his education, of the superiority of the young count de Montpensier, in mental as well as bodily accomplishments, in capacity of understanding, as well as beauty, strength, and address over not only most nobles, but most men of his time.

In the marriage articles it was stipulated, 1st. that there should be a reversion of all their property in favour of the survivor; 2nd. that the children who should be born of the marriage should inherit all the domains of the house of Bourbon; and that, in failure of children, the whole succession should devolve on Francis, Monsieur de Bourbon, only brother of Montpensier; 3rd. Montpensier assigned a jointure of 10,000 livres a year to his wife on the Bourbonnais. The king renounced for himself and his successors the personal rights which the treaty of marriage of the duke Pierre II, with Anne of France, daughter of Louis XI, gave by the crown over all the property of the House of Bourbon, if he should die without male children.

Having become the nearest of all the princes of his house who have not worn the crown, the magnificence of the new duke de Bourbon corresponded with his wealth. He never travelled without a brilliant train of horseguards, and without being surrounded by the chief nobles of his domains, and his principal officers, who composed a court little inferior to that of a powerful monarch.

The first essay in arms of the duke was in the expedition which Louis XII, made in person into Italy. In this campaign Jean Bourbon devoted himself with much industry to

zeal to the study of strategics. He selected for his friends and masters La Tremoille, Bayard, and others, who were distinguished as military leaders. He conversed with them on plans of campaigns, marches, encampments, on the details of discipline and subsistence. From the generals he went to subordinate officers who had acquired reputation. At night, when he retired to his tent or his cabinet, he reduced to writing his observations and the result of his conferences. Such is the labour of those, if we may be allowed to transfer the sentence of Johnson, who *fight* for immortality.

Bourbon returned to France in 1509. In the war of the league of Cambray he had an opportunity of displaying his talents for war.

Upon the death of Gaston de Foix, in 1512, the army of Italy demanded with acclamations Bourbon for their leader. But Louis XII. did not comply with its wishes. It is reported that he appeared to be somewhat afraid of Bourbon; that he was heard to say that he should have wished to see in him more openness, more gaiety, and less taciturnity. 'Nothing is worse,' added he, 'than the water which sleeps.'

Upon the accession of Francis I. to the crown, Bourbon was immediately (1515) appointed constable. It will afford some notion both of the character of the times and the magnificence of the duke de Bourbon, to mention that at the king's coronation, when Bourbon represented the duke of Normandy, his suite consisted of two hundred noblemen.

The constable devoted himself assiduously to the duties of his new office, the highest in a military government like what France then was. He introduced many important regulations respecting the discipline of the troops. He particularly directed his attention to the protection of the citizens and peasants against the insolence and oppression of the soldiery. His regulations under this head exhibit considerable administrative talent; and his unbending austerity in enforcing the rules he had laid down showed that he fully understood how much a severe discipline conduces to victory. The salutary effects of this system were shown very soon in the victory of Marignano, which was mainly owing to Bourbon's skill and valour.

Our space will only permit the notice of as many of the events in which Bourbon was engaged as are necessary to the understanding of the main incidents that determined his character and shaped his destiny. And these even in a work like the present, are of more importance than perhaps they may appear to superficial inquirers; for the events of Bourbon's later career might be said to have influenced in no inconsiderable degree the destinies of Europe, and hence those of mankind.

When Francis I. returned to France in 1516, he left the constable in Lombardy as his lieutenant-general. While here he proposed to the court the conquest of the kingdom of Naples. But while he was making preparations for this expedition, an unexpected invasion of the Milanese by the Emperor Maximilian of Austria took place. Against this irruption Bourbon's first proceeding was to repair the fortifications of Milan, for which purpose he levied a body of 6000 pioneers, by means of a loan, which his high character enabled him to raise. Aware that Francis was not in a condition to grant him any aid, he applied to Albert de la Pierre, a renowned captain of the canton of Zürich; and he obtained, by his own credit, permission to levy a body of 12,000 Swiss. These, after considerable delay, having at length arrived and received three months' pay in advance, refused to go out and attack the emperor, who was encamped at the gates of the town, on the plea that they would not slaughter their fellow-countrymen attached to the service of the emperor. Bourbon disbanded them on the spot; and they coolly departed with his money in their pockets, with the exception of Albert de la Pierre and his company of 300 men. It happened fortunately however that the Swiss in the emperor's army, to the number of 14,000, mutinied for their pay, which was one month in arrear, and which the emperor had reckoned on discharging at the expense of the inhabitants of Milan. This event and its immediate consequences caused the dispersion of the formidable army of Maximilian.

When Bourbon appeared after these events at the French court, which was then at Lyons, he was received by Francis with great distinction. But gradually the king was observed to cool. Historians have usually ascribed this alteration of the king's behaviour towards Bourbon to the influence of

his mother, Louisa of Savoy, Duchesse d'Angoulême. This princess, who at forty retained striking remains of beauty, and who was not a woman of very nice morality, is said to have entertained a violent passion for Bourbon; and Bourbon is said to have treated her advances with coldness and even disdain. The rage of a woman thus slighted has become proverbial; and Louisa of Savoy was not one to belie the proverb. The king espoused the quarrel of his mother, of the cause of which charity would suppose him ignorant. The consequence was, one of the most signal examples of ingratitude and injustice upon record.

They began by refusing the payment of the sums which he had borrowed in order to save the Milanese, as well as of all his appointments as prince of the blood, constable and chamberlain of France, and governor of Languedoc. This, however, was light compared to what followed; and was the less to be considered as a wanton insult from the circumstance that Francis, partly by his own profligate expenditure, partly by the cupidity of his mother, was always in want of money, notwithstanding the resources opened to him by the chancellor Du Prat, in the sale of the offices of the magistracy. A breach between Francis and Bourbon was more easily effected from the contrast between their characters, which was great. Francis was gay, open, gallant, superficial, fond of pleasure, and averse from business; Bourbon was grave, reserved, thoughtful, profound, and laborious.

In April, 1521, the constable's wife, Suzanne de Bourbon, died. He had previously lost the three children he had by her.

The breach between the court and the constable daily widened. In a northern campaign against Charles V., Francis gave the command of the vanguard, which, by a practice established in the French armies, belonged to the constable, to the Duke d'Alençon. From that moment Bourbon regarded himself as degraded from his dignity. He was frequently heard to quote that answer of a courtier to Charles VII., who asked if anything was capable of shaking his fidelity:—'No, Sire, no, not the offer of three kingdoms such as yours; but an affront is.'

Fresh injuries and insults were heaped upon Bourbon. The chancellor Du Prat, in the spirit of the vilest petulancer, by examining the titles of the house of Bourbon, thought he saw, that by perverting the use of some words, he might be able to deprive the constable of his estates, and convey them to the Duchesse d'Angoulême, or to the king. He explained to the duchess that she had a right to the greatest part of the property of the house of Bourbon, as the nearest relative of Suzanne de Bourbon, and that the rest reverted to the crown. Madame admired the ability and zeal of the chancellor, and entered fully into his views. She now flattered herself that Bourbon would choose rather to secure his rights by marrying her, than be reduced to misery. But the haughty and austere Bourbon, when his friends pressed him to marry the princess, placing in the most favourable light her power, wit, and riches, said that he was so sure of his right that he was ready to try it before any or all of the courts; he declared, moreover, that honour was far dearer to him than property, and that he would never incur the reproach of having degraded himself so far as to share his bed with a profligate woman. The result of such a trial, under such a government as that of France at that time, may be easily foreseen. The parliament decreed that all the property in litigation should be sequestered: which was to reduce Bourbon to beggary.

It will be unnecessary in a work like this, to follow Bourbon step by step in the disastrous route that conducted him from being the first subject in France, to be an exile and an outlaw. We have traced his career hitherto with some minuteness, as tending to throw light on the nature of the European governments in the sixteenth century. If such a thing had happened in France, two or perhaps even one century earlier, to a man so powerful as Bourbon, at once by station and by talent and energy, the probable result would have been very different. The struggle would most likely have terminated in Charles of Bourbon filling the throne of France in the room of Francis of Valois. But about or somewhat before this time had arisen that devotion to royalty, which would seem to have been first introduced by the plebeian legists or lawyers; who were probably led by self-interest to adopt such a measure, in order at once to obtain favour with royalty, and render royalty more able to advance and support them against the old noblesse

of the sword. As it was, another fate was reserved for Bourbon.

Francis having obtained intelligence that Bourbon had entered into a secret correspondence with the Emperor Charles V., Bourbon was obliged to make his escape from France, which he did with some difficulty. Some proposals which were afterwards made to him by Francis were rejected by Bourbon, who had good reason to distrust his sincerity. Bourbon was now thrown upon Charles V., who, though not a little disappointed at receiving a banished man instead of a powerful ally, as he had first expected, appointed him his lieutenant-general in Italy. He surrounded him however with colleagues and spies.

In 1525 the result of the famous battle of Pavia, where Bourbon commanded a body of about 19,000 Germans, whom he had raised professedly for the emperor's service, chiefly by means of his high military reputation, afforded him ample vengeance for his wrongs, in the destruction of the French army, and particularly in the capture of Francis, and the death of Bonnivet, his chief personal enemy.

But Bourbon, although to his military talents and skill the victory at Pavia had been mainly owing, found that he was still regarded with distrust by Charles, and with jealousy by his generals. The slights and mortifications, too, to which his fighting against his king and his native country subjected him, rendered his position anything but an agreeable or easy one; and contributed, with the roving and unsettled life he had led since his exile, to produce in him something of the recklessness, and even ferocity of the brigands he commanded, and to give to his natural ambition much of the genuine and legitimate character of large and wholesale robbery. It was in the complex state of mind, made up of some such elements as these, that he came to the resolution of acting independently of the emperor, and commencing business, as king, on his own account. Fortune seemed to throw in his way one means of accomplishing this object, in attaching to himself, by the allurements of an immense booty, the army which the emperor did not pay. He formed the daring resolution of leading that army to Rome, and giving up to it the riches of that famous city; and he immediately proceeded to put it in execution.

This expedition has been considered one of the boldest recorded in history. Bourbon was obliged to abandon his communication with the Milanese, to march for more than a hundred leagues through an enemy's country, to cross rivers, to pass the Apennines, and to keep in check three armies. Add to this, what rendered the enterprise important as distinguishing it from others of a similar nature undertaken by large robbers, the moral danger and difficulty of attacking the very centre of the power of catholicism, as it were laying bare the mysteries of its sanctuary, and, to a certain extent, destroying the powerful spell by which it had so long bound up the faculties of mankind. We do not think that the praise of any high exercise of moral courage is due on this score to Bourbon, for it does not appear that he was guided by a consideration of the consequences hinted at above, but chiefly, if not solely, by the necessity of the circumstances in which he was placed.

On the evening of the 5th of May, 1527, Bourbon arrived before Rome. On the following morning, at day-break, he commenced the assault, being himself the first who mounted the wall, and also, according to the French historian, the first who fell, by a shot fired, it is said, by a priest. Benvenuto Cellini says, that it was he who shot Bourbon; and Guicciardini does not clear up the point. It is however of small consequence, two facts being certain, that he fell in the beginning of the assault, and that his army took the city, in which they committed all, and more than all, the usual excesses of a sack.

Charles V. made it one of the conditions of peace with Francis that the possessions of the constable should be restored to his family, and his memory re-established. Francis eluded, as much as he was able, the fulfilment of this condition. But the wreck of the constable's fortune was sufficient to render his nephew, Louis de Bourbon, Prince de la Roche-sur-Yon, and afterwards Duke de Montpensier, one of the richest princes of the blood, although it did not form, perhaps, a third part of the revenues of the Duke de Bourbon.

Bourbon is reputed to have been one of the handsomest men of his age; and he is said to have been an exemplary husband, and free from the gross licentiousness of the times. He was much beloved by his vassals, who with that resolute

incredulity which is sometimes observed in uneducated persons with respect to any report injurious to those they love or respect, refused to believe the account of his death, and persisted in expecting to see him return one day covered with glory, and reconciled to the king.

The authorities the same as in the preceding article, with the addition of the French historians and Guicciardini.

BOURBON is situated in the Indian Ocean to the E. of Madagascar. The town of St. Denis at its N.W. extremity is in 20° 51' 30" S. lat., and 55° 30' E. long.; from this place the island extends in a S. E. direction for about 60 m. with a breadth of about 45 m. The whole surface may be about 2400 sq. m., or about 400 sq. m. more than the area of Norfolk.

This island was discovered by the Portuguese navigator Mascarenhas in 1542, and at that time was not inhabited. It received the name of Mascarenhas or Mascareigne. The French in 1642 sent some criminals from Madagascar to it, and settled a colony in 1649, when they gave it the name of Bourbon, which at the beginning of the French revolution was changed into that of Réunion, and afterwards into Bonaparte and Napoleon. In 1815, on the restoration of the Bourbons, the island resumed its old name of Bourbon.

Probably all the island owes its origin to volcanic agency. The greater part of its surface consists of lava, basalt and other volcanic productions, and on the remainder traces of such rocks are frequent. Towards the S.E. extremity there is a volcano constantly in action, and naturalists who have had an opportunity of examining the high mountains toward the N. W. extremity believe that this part also has been an active volcano at some remote date.

The island consists of two systems of volcanic mountains and rocks, and a kind of plain which divides them. The north-western mountains form the larger system and cover about half the surface of the island. Nearly in their centre rises a huge mass of lava with three inaccessible peaks, called the Salazes, whose absolute elevation is estimated by Bory de St. Vincent at nearly 1500 toises, or 9600 feet. The country surrounding this mass exhibits large tracts of lava or basaltic rocks of the most various description, and between them some basins or vales. The basaltic prisms are frequently disposed in regular columns, but these as well as the lava rocks are frequently split by deep narrow crevices. The soil which covers only a small portion of this region is evidently the product of decomposed lava, and for the most part is still incapable of supporting any vegetation. It is of a red colour and resembles clay indurated by fire. At some places however it is softer, and has been planted with coffee-trees; and in others, forests of timber-trees are growing. The rivers are only torrents, which descend from a great elevation. Sometimes they are nearly dry; at others they carry great volumes of water, which they pour down the steep declivities with incredible impetuosity. Their course is through extremely narrow gorges, and in deep beds. None of them can be used in irrigating the adjacent country. The shores of the island are rocky, but not generally very high, except along the S. W. coast between St. Paul and St. Petre. In a few places a narrow beach separates the rocks from the sea; it is composed of pieces of basalt and broken lava, which have undergone trituration in the sea, and afterwards been thrown ashore, intermixed with some calcareous pebbles and shells. At the N.W. point of this region lies St. Denis, the capital of the island, with a pop. of 7000 or 8000. It has no harbour, and only an open and dangerous roadstead. A pier secured by iron chains has been constructed for the purpose of enabling boats to land; at the end of it is a ladder by which persons who wish to go ashore may ascend; in all other parts of the island they must jump into the water. Besides the roadstead of St. Denis, there is another at St. Paul, which is perhaps better, but no other place round the island offers an anchoring ground for vessels.

The plains which separate this volcanic region from that in the S.E. district of the island, occupy perhaps one-third of the island. The two principal plains which extend across the island, the plains of the Caffres and of the Palmists, are divided by a rampart of volcanic rocks, and are at a considerable elevation above the level of the sea. From the S. shores the country rises gradually for some miles, and then extends in a kind of uneven plain, called that of the Caffres. Its surface is a succession of small plains, rising above one another and intersected by hillocks. At the S. extremity this plain is 3600 ft. above the sea, but

where it joins the plain of Cilaos, towards the S. E. volcanic region, its elevation may be nearly 5000 ft. Its soil is entirely composed of triturated lava and other volcanic matter: a great part of it is without any kind of vegetation; in some places there are shrubs, but no trees. To the N. of it extends the plain of the Palmists, which rises to about 3000 ft. It is a perfect level, in the form of a circus, enclosed on all sides, except towards the shores on the N., by a nearly perpendicular wall of mountains from 1500 to 2000 ft. elevation, which are partly covered with high trees and rich vegetation: on the plain itself many trees are found, among which the species of palms abounds, from which it derives its name. The descent to the shore is somewhat longer than on the S. declivity of the island. The traveller ascends from the plain of the Caffres to the S.E. volcanic region by two other extremely sterile plains, those of Cilaos and of the Sands (aux Sables).

This volcanic region at the S.E. extremity, which probably does not occupy more than one-seventh of the island, is called the burned land (pays brûlé), from its soil being entirely composed of recent lava. There are few places in which signs of vegetation are seen. Nearly in its centre is the present crater of the volcano, which nearly every year changes its place over an extent of 5 to 6 sq. m. This present centre of volcanic agency is only from 8 to 9 m. from the S.W. extremity of the island, and the high mountains near it are estimated to have an absolute elevation of about 7000 ft. The eruptions of this volcano succeed one another at short intervals.

A soil so arid as that of Bourbon could not maintain a vigorous vegetation if it were not continually supplied with sufficient moisture by the regular succession of land and sea-breezes. The first, blowing from the high mountains of the interior, are always cool, frequently cold; and in the gorges they blow with great force. The wind is sometimes felt from five to eight miles from the shore. It ceases at about 10 o'clock in the morning, and is succeeded by the sea-breeze, which brings with it fogs. These fogs are afterwards dissipated by the rays of the sun, and driven again to the sea. This circulation of the vapours produces a great humidity, and rains are consequently frequent, especially during the S.E. winds, from July to October. During the N.E. winds, from January to April, the rains are still more frequent, and often continual for many days, and very heavy. But in despite of this humidity of the air, the climate is pleasant and healthy. During the winter, from April to August, the highest peaks are covered with snow. Hurricanes occur twice or thrice a-year.

The interior of the island is not inhabited, and perhaps not habitable, on account of the sterility of its soil. The cultivated ground in no place extends more than 5 or 6 m. from the sea. Within these limits are cultivated maize, corn, a little rice, mandioca, sweet potatoes, ignames and haricots; and for exportation, a little sugar and cocoa, and a great quantity of coffee, which is of excellent quality. There are some plantations of cloves and nutmeg-trees, but the produce is neither abundant nor of good quality. The most common fruits are guavas, bananas, citrons, tamarinds, lemons and oranges. In many parts of the interior, especially at the feet of the higher mountains, are extensive forests of timber-trees, which furnish a considerable article of exportation.

In 1825 there were, of domestic animals, 3718 horses, 1803 mules, 505 asses, 4303 black cattle, and 2881 sheep. In the woods are wild goats and wild hogs; and land-turtles occur in the western districts. There are spiders as large as a pigeon's egg, and their web is so strong that many have supposed it could be used like silk. Bats are numerous, and eaten as a great delicacy. On the shores are found ambergris, coral, and many beautiful shells.

The inhabitants are composed of a few families of pure European blood, and a greater number of such as have mixed with the African races. There is a considerable number of free negroes, and a still greater number of slaves. In 1823 the population amounted to 17,037 whites, 5159 free negroes, and 45,375 slaves. The number of the latter is rapidly decreasing.

The island has a commercial intercourse with France, and with the ports along the E. shores of Africa, with Madagascar, and with Mauritius. It is entirely carried on in French and foreign vessels. In 1824 the number of French vessels visiting Bourbon amounted to 117, and their crews to 2018 men; their tonnage was 28,168. Of foreign

vessels there arrived 107, their crews amounting to 1516, and their tonnage to 11,707. In 1825 Bourbon was visited by 153 French vessels, of which the crews amounted to 2414 men, and the tonnage to 31,833. The foreign vessels, 98 in number, had on board 1056 men, and their tonnage amounted to 9944.

The articles of exportation are coffee, sugar, cocoa, cloves, and nutmegs, and a considerable quantity of timber, with some articles imported from France. The following table shows the amount of the exportations in 1825, and to what countries they went:—

	Productions:	Foreign commodities
France	8,629,755 fr.	289,992 fr.
India	674,848	386,904
Mauritius	137,754	635,984
Madagascar	60,028	863,724
	9,502,585	2,176,605

The island of Bourbon is the only settlement which the French now possess between Africa and India. (Bory de Saint-Vincent, *Voyage dans les Quatre Isles de la Mer Africaine*; and Thomas, *Essai de Statistique de l'Isle de Bourbon*.)

BOURBON, the name of several places in France: of which only three are of sufficient importance to merit individual notice—viz., Bourbon Vendée, Bourbon L'Archevêque, and Bourbon Lancy.

Bourbon Vendée, the capital of the dep. of Vendée, stands on the little river Yon, a branch of the Lay. It is 227 m. in a straight line S. W. from Paris, or 253 m. by the road through Orléans, Tours, Saumur, Chollet, and Montreuil. It is in 46° 41' N. lat., and 1° 29' W. long.

The importance of this place is quite of modern origin, and, notwithstanding its name, is due to the favour bestowed to it by Napoleon. It was known in the middle ages by the name of Roche-sur-Yon, and was a small country town (*bourg*) of little importance, except for a strong fortress which was delivered up to the English in 1369 by the treachery of the governor, Jean Blondeau. This man had afterwards fallen into the power of the duke of Anjou, and by his orders put into a sack and drowned. Roche-sur-Yon was a principality belonging to the house of Bourbon-Conti.

'The town had sunk into obscurity and decay, when Bonaparte thought proper to rebuild and constitute it the chief place of the dep. of La Vendée, appointing it for the seat of the prefecture. He gave it his own name, Napoleon, and made it a military station; had a barrack, a guildhall, an exchange, and a handsome hotel erected, and streets and squares planned; so that there are all the requisites of a principal town, save houses and inhabitants. He wished to induce the people of La Vendée to live in towns, where they would be less under the influence of their chiefs, and more orderly subjects: but it is not easy to break through traditional habits; the Vendéans preferred remaining in the half-burnt villages to settling in his new town, which, a navigable river being near, offered them no facilities for trade, nor any other advantages to allure them from their rural haunts, their rural employments, and their rural sports.' (*Journal of a Tour in France in 1816 and 1817*, by Frances Jane Carey.)

'When Louis XVIII. was called to the throne, the name of the town was changed to Bourbon Vendée, and when Bonaparte returned from Elba, to Napoleon again; and it is now Bourbon Vendée once more.' (*Ibid.*)

Napoleon devoted the sum of 3,000,000 francs, or 125,000*l.*, to the construction of the edifices needful to maintain its rank of a departmental capital. The vast project traced by him remains however yet incomplete from want of funds, and the large straight streets are almost unhabited. A canal, called by Malte Brun the Canal de Brét, but the course of which is not mentioned, has been projected, and may serve when completed to improve the ill-chosen site, and draw some commerce to the town: the trade is carried on at present is in corn, cattle, and produce. There is a handsome church in the Place Royale; small as the town is, it has a library, a high school, a society of agriculture, sciences, and arts. There are baths. The pop. by the last return, previous to that of 1825 was 3129 (we believe this return was of 1826); and by return of 1832 it was 3904, of whom 3494 were in the town itself.

The arrond. of Bourbon Vendée comprehends 630 sq. r.

or 403,200 acres, and is subdivided into 8 cantons and 73 communes. The pop. in 1832 was 115,988.

Bourbon L'Archambault, or *L'Archambaud*, is in the dep. of Allier, and near the little river Barge, a feeder of the Ours, which falls into the Allier. It is about 160 or 162 m. S. by E. of Paris in a straight line, or 197 m. by the road to Fontainebleau, Montargis, Nevers, and Moulins. It is in 46° 36' N. lat., and 3° 1' E. long.

This town appears to have been known for its mineral waters to the Romans, who called them by the name of *Aquæ Bormonis*. It was a place of some importance in the eighth century; for in the wars which Pepin le Bref, father of Charlemagne, carried on against the duke of Aquitaine, Bourbon is mentioned as one of the places taken by him. It is thought to have obtained its name from the mud (*bourbe*) contained in its waters, or perhaps from a deity called Borvo [*BOURBONNE LES BAINS*]. About the tenth century Charles le Simple granted Bourbon, with the surrounding district, to a favourite of his named Aymard; and his descendants, the sires or lords of Bourbon, having in most cases borne the name of Archambaud, that name was attached to the town itself (*Dictionnaire Universel de la France*). Others make the origin of the lordship of Bourbon to have been a century later. By marriage this lordship came to a younger branch of the royal family of France, and was in 1329 erected into a duchy by Philip VI. (de Valois), or according to others, in 1327, by Charles IV. (le Bel). From the first duke, Louis, grandson of Louis IX. (St. Louis) of France, descended a line of nobles, of whom the male descendants failed in the early part of the sixteenth century, and the duchy came by the marriage of the heirress to the count of Montpensier, who assumed the title of duke of Bourbon. [*BOURBON.*]

The town of Bourbon is in a beautiful and rich valley or hollow, between four hills, a few miles from the left bank of the Allier; but the air is considered far from wholesome, owing to the neighbourhood of a marshy pool, and the situation of the town in a hollow, surrounded by steep hills. On one of the hills is the ruin of an ancient castle of the sires or dukes of Bourbon: the ruin consists of three towers in pretty good preservation. The church, which appears to have been the chapel of the dukes of Bourbon, and an appendage to the castle, is remarkable for its beautiful stained glass windows. The town depends mainly on its mineral waters, which attract a number of invalids, who resort hither to find relief from rheumatic or paralytic attacks. The waters are contained in three wells, and have a temperature of 58° to 60° of Réaumur, or 162° to 167° of Fahrenheit. The season lasts from the middle of May to the end of September. The celebrated Madame de Montespan, mistress of Louis XIV. died here in disgrace, if not in exile. The pop. is given in round numbers by Malte Brun and Balbi at 3000.

The river Barge, near which the town stands, seems to expand into a marshy pool. It abounds in fish.

Bourbon Lancy is in the dep. of Saône et Loire, a short distance from the right bank of the Loire, about 166 to 168 m. in a straight line S.E. of Paris, or 218 m. by the road through Sens, Auxerre, and Autun. It is in 46° 37' N. lat., and 3° 46' E. long.

Bourbon Lancy, like the town above mentioned, was known to the Romans for its mineral waters. It appears in the Theodosian table under the name of *Aquæ Nisineii*. It is supposed to have derived its distinguishing epithet of Lancy, or as the geographers of seventy years since wrote it, L'Anci or L'Ancy, from one of the feudal lords of the place, who was named Ancellus or Anceau, otherwise Anceume or Ancelme.

The baths, which give to this town its chief claim to notice, are in the suburb of St. Leger. There are several springs, seven according to some authors (Expilly; *Dictionnaire Universelle*; *Encyclopédie Méthodique*), nine according to the more modern statement of M. Robert (*Dictionnaire Géographique*, Paris, 1818); of which nine, one is very cold, the rest warm, the temperature being about 50° of Réaumur, or 145° of Fahrenheit. The great bath is thought to be a Roman work; it is circular, 60 French or 64 English feet, or according to Reichard only 42 feet in diameter, paved with marble, and capable of containing 500 persons. Near this is a large square bath, built for the poor. The waters are described as being limpid, tasteless, and without smell (so that they may be used in making bread), yet they are said to contain sea-salt, sulphur, and

bitumen. They are used in nervous and rheumatic affections. It is remarkable that although the great bath, which is a Roman work, has continued to the present day, the springs fell into neglect and oblivion. In 1580 they were again brought into notice, and the baths re-established by Henry III. The war of the league interrupted the improvements going on, which were however resumed and continued by Henry IV. and Louis XIV. Many remains of antiquity, statues, medals, and the relics of ancient buildings, have been from time to time dug up in and about the place. The pop. is given by Malte Brun at 2500 in round numbers. Visitors come hither in spring and autumn, and seldom stay above a month. (*Dictionnaire Universel de la France*; Malte Brun; Expilly, &c.)

BOURBONNE-LES-BAINS, a town in France, in the dep. of Haute Marne. It is in the S.E. part of the dep. and at the confluence of the small rivers, the Borne and Apance, which latter riv. is a tributary of the Saône, 165 m. in Brué's map of France, or 170 in that published by the Soc. for the Diffus. of Useful Know., in a direct line S.E. by E. from Paris; or 179 m. by the road through Provins, Troyes and Chaumont-en-Bassigny: in 47° 57' N. lat. and 5° 46' E. long.

D'Anville considers that this town was known to the Romans, and that it is marked in the Theodosian Table by a square building, similar to those which in that table are used to indicate mineral waters; though no name is extant as applied to this place. A Roman inscription has been found here which D'Anville says was sacred, *Borvoni et Monæ Deo*; and from this he has given to the place the name of *Aquæ Borvonis*. (*Notice de l'Ancienne Gaule*.) The inscription is however given by Expilly at full length, as follows:—

BOBONI THERMARUM DEO MAMMONÆ
CALATINIUS ROMANUS IN GALLIA
PRO SALUTE
CÖCILIAE UXORIS EJUS EX VOTO EREXIT.

From this mention of *Borbo* or *Borbon*, as the presiding deity of the baths, it is likely we may deduce the etymology of the name Bourbon more correctly than is commonly done. [*BOURBON L'Archambault.*]

In the beginning of the seventh century, a castle was built here to which an ancient writer gives the name of *Vervona*; but it does not appear that any historical interest attaches to Bourbonne. In 1717 the town was burnt almost entirely, and the ancient castle shared the same fate.

The town stands on a declivity, and presents little that is pleasing in its aspect. It would not claim notice except for its waters and its military hospital. The temperature of the springs varies from 30° to 48° of Réaumur; or about 100° to 140° of Fahrenheit, (Malte Brun); or to 62° of Réaumur, or 172° of Fahrenheit. (*Encyclopédie Méthod.*) Although too hot for one to bear the finger in them, they are drunk without scalding the mouth. (Malte Brun.) There appear to be three baths, or rather three establishments of two baths each, called *Le Bain du Seigneur*, from having formerly belonged to the lords of the soil; *Les Bains des Pauvres*; and *Le Bain Patrice*. (Expilly, and *Dict. Universelle de la France*.) The waters are said to be good for gout, rheumatism, scurvy, gravel, venereal complaints, palsy, and nervous affections; also for gun-shot wounds. They are taken by drinking and bathing; and the very mud or sediment is said to be serviceable used as a poultice. The season includes June, July, August, and September.

The military hospital contains more than 500 beds. The pop. of the town is given in round numbers by Malte Brun at 3500; and by M. Balbi at 4000. There are some pleasant promenades. (Malte Brun; Expilly; Reichard's *Descriptive Road-book of France*.)

BOURBONNOIS, a district of Central France, one of the thirty-two provinces or military governments into which, before the revolution, that kingdom was divided. It was bounded on the N. by Berri and the Nivernois; on the E. by Bourgogne or Burgundy; on the S.E. by the Lyonnais; and on the S. by Auvergne; on the S.W. by La Marche; and on the W. by Berri. Its form was very irregular: the greatest length from W.N.W. to E.S.E. was 92 m., and the greatest breadth was 56. The greater part of it is included in the dep. of Allier.

The province was separated from Bourgogne partly by

the river Loire; and it was watered by different branches of that principal stream, as the Bebre, the Allier, and the Cher, and by the various tributaries of these, so that the whole was included within the basin of the Loire. The Bourbonnois was usually divided into high and low: the former being the E. and the latter the W. part. Moulins, on the Allier, was the capital of the whole (pop. in 1832, 14,672): and the other chief towns were Bourbon l'Archambault (pop. about 3000); Gannat, on the Anelot, a feeder of the Allier (pop. in 1832, 4674 for the town, or 5246 for the whole commune); and Montluçon, on the Cher (pop. in 1832, 4470 for the town, or 4491 for the whole commune).

BOURCHIER, JOHN. [BERNERS, LORD.]

BOURCHIER, or **BOURGCHIER, THOMAS**, archbishop of Canterbury in the successive reigns of Henry VI., Edward IV., Edward V., Richard III., and Henry VII., was son of William Bourchier, Earl of Eu in Normandy, by Anne, daughter of Thomas of Woodstock, sixth son of Edward III. His brother was Henry, Earl of Essex. He received his education at Oxford, and was chancellor of that University from 1434 to 1437. His first dignity in the church was the deanery of St. Martin in London, from which in 1434 he was advanced by Pope Eugenius IV. to the see of Worcester. In 1436 he was elected by the monks of Ely bishop of that see, but the king refusing his consent the election was not complied with, and the see continued vacant till 1443, when the king yielding his consent Bourchier was translated thither. In April, 1454, Bourchier was elected archbishop of Canterbury; and in December following received the red hat from Rome, being created cardinal-priest of St. Cyriacus in Thermis. In 1456 he became lord chancellor of England, but resigned that office in October of the following year.

Several acts of Cardinal Bourchier's life were memorable. He was one of the chief persons by whose means the art of printing was introduced into England. He was the person who, seduced by the specious pretences of Richard, Duke of Gloucester, persuaded the queen to deliver up the Duke of York, her son; and he performed the marriage ceremony between Henry VII. and Elizabeth of York.

He died at his palace of Knowle near Sevenoaks on the 30th of March, 1486, and was buried at Canterbury, where his tomb still remains on the north side of the choir near the high altar. It cannot be unknown to our readers that the archbishops of Canterbury and York, and the bishops of Durham had antiently the privilege of coining money. A half-groat of Edward IV., struck at Canterbury during Bourchier's primacy, has the family cognizance, the Bourchier knot, under the king's head. This is unnoticed by any of the writers on English coins.

(Wharton's *Anglia Sacra*, tom. i. p. 63; Bentham's *Hist. of Ely*, p. 173; *Biogr. Brit.* vol. ii. p. 436.)

BOURDALOUE, LOUIS, was born at Bourges, Aug. 20, 1632, and professed among the Jesuits on Nov. 30, 1648. Having lectured successively in grammar, rhetoric, humanity, and moral philosophy, with considerable repute, he commenced as preacher in the Jesuit church of St. Louis at Paris in the year 1669. It was not long before Louis XIV. became a personal attendant upon his sermons, which were heard with undiminished delight by overflowing congregations in the seasons of Advent and Lent for four-and-twenty years. After the revocation of the edict of Nantes, Bourdaloue was despatched, in 1686, on an especial mission into Languedoc, in which province he produced a deep impression, chiefly at Montpellier. His latter years were principally devoted to charity sermons, and he continued to be a frequent occupant of the pulpit till a very few days before his death, which occurred on May 13, 1704. His sermons have often been reprinted. They abound more in sound reasoning and theological learning than in oratorical power, and they are better suited to the chastened taste of protestantism than the efforts of most other celebrated French divines. It has been said with more justice than usually belongs to antithesis, that Bossuet is sublime from elevation, Bourdaloue from depth of thought.

BOURDON, SEBASTIAN, one of the most eminent painters that France has produced, was born at Montpellier, in 1616. His father, a painter on glass, instructed him in the elements of his art. At the age of seven, a relation took him to Paris and placed him under an artist of no great ability; but the genius of the pupil supplied the deficiencies of the master. While yet a boy, being in want of other employment, he enlisted in the army. Luckily his com-

manding officer possessed taste enough to discern the natural powers of the young recruit, and he gave him his discharge. At eighteen he passed into Italy, where he made acquaintance with Claude Lorraine. He remained there but three years, being obliged to leave the country in consequence of a quarrel with a painter, who threatened to denounce him as a Calvinist. During his stay he occupied himself in practice, studying, and imitating the works of Titian, Poussin, Claude, Andrea Sacchi, Michel Angelo, delle Battaglie, and Bamboccio. So retentive was his memory, that he copied a picture of Claude's from recollection a performance which astonished that great master as much as any who saw it.

On his return to France, Bourdon received some instruction from Du Guernier, a miniature painter in great repute, whose sister he married; a connexion which procured him an increase of employment. His occupations being interrupted by the civil wars in 1652, he went into Sweden, and Christina, who then occupied the throne, appointed him her principal painter. In this capacity he executed many pictures, and among them a portrait of his royal mistress on horseback. While he was at work upon it, the queen took occasion to mention some pictures which her father had become possessed of, and desired him to examine them. Bourdon returned a very favourable report of the collection, particularly of some by Correggio; and his generous patroness at once made him a present of them. The painter, however, with no less generosity, declined the offer; saying that the pictures were among the finest in Europe, and that she ought not to part with them. The queen kept them accordingly, and taking them to Rome with her after her abdication, they ultimately found their way into the Ottonian collection.

When Christina vacated the throne, Bourdon returned to France, which had become somewhat quieter, and employment offered itself in abundance. At this period he painted the 'Dead Christ,' and the 'Woman taken in adultery,' two of his most famous pictures. He does not appear, however, to have ever amassed any sum of money; but, while on a visit to his native place, an admirer of his made him a suit of clothes, with a red cap, and sent them to him by a brother painter, as a tribute of admiration. Bourdon painted a portrait of himself dressed in the clothes with his friend the bearer by his side. Being much pleased with his success, he had not the heart to send the picture to the munificent tailor, as he had intended, but he made a copy which he gave him instead. In 1648 he assisted in forming the Royal Academy of Painting, and was elected its first director. He died at Paris in 1671, aged 55. He had several daughters, miniature painters, who survived him. Gerolot, M. and F. Vaurose, and Nicholas Loir, were his pupils.

Bourdon had a most fertile genius, an ardent spirit, and a great facility, which enabled him to indulge too much in a careless mode of study. He had no fixed style of painting, but followed his own caprice, imitating many; and he excelled equally in all kinds, history, landscapes, battle-pieces, and comic subjects. His colour is fresh, and his touch bold and sharp; his expressions lively, and his invention rapid; but his drawing is hurried, and his extremities modelled with great carelessness. He did not finish highly; nor are his most finished pictures his best. His execution was so rapid that he is said to have completed twelve heads of the same nature, and the size of life, in a single day; and they were esteemed equal to some of his best productions. This surprising facility enabled him to enrich his landscapes with some of the most singular and happy effects from nature. When at Venice he had studied the works of Titian with great attention, and his admirers trace some of the beauties of the Venetian in his landscapes; they partake also of the style of Poussin, and have a wildness and singularity peculiar to himself. (D'Argenville; De Piles.)

BOURG, the name of several places in France, one of the principal of which we subjoin an account. The name denotes town, like our own burgh or borough [Borough], and in France is applied especially to small places which do not take the title of *ville*.

Bourg, capital of the dep. of Ain, called also *Bourg de Bresse*, from its situation in the district of Bresse, a division of the Duchy of Bourgogne [Bourgoigne]. It is on the river Reyssouse, a small tributary of the Saône, about 230 m. in a straight line S. S. E. from Paris, or about 100 m. by the road through Auxerre, Autun, Chalons, and M-

and 50 m. by the road N.N.E. of Lyon. It is in 46° 13' N. lat. and 5° 12' E. long.

M. de Thou, in speaking of a siege which this town sustained in 1559, calls it *Forum Segusianorum olim Tanus*; and M. Malte Brun, following, it is likely, M. de Thou, says, that in the 4th century it was called Tanus. D'Anville, however, does not fix any town upon the site of Bourg; nor does he notice *Tanus*; and *Forum Segusianorum* is, according to him, Feur or Feurs, on the Loire. It seems then better to prefer the account given by Longuerue (*Description de la France, Ancienne et Moderne*, liv. iii.), that Bourg was founded by the lords of Baugé or Bagé, formerly capital of Bresse, and that it does not appear to have been of earlier date than the 13th century; about which time the name appears in several records. Guy, last lord of Baugé, and marquis of Bresse, granted to Bourg the privileges of a free town, in consequence of which the place increased and became of some importance under the government of the counts and dukes of Savoy, to whom Bresse came by marriage in the 13th century. In 1561, or 1569, the then reigning duke of Savoy, Emanuel Philibert, caused a strong citadel to be built at Bourg, on a height, which, however, was demolished by order of the regent Mary of Medici, mother of Louis XIII., about ten years after Bresse had come (by the treaty of Lyon) into the hands of the kings of France.

The town, which is in an agreeable situation, is adorned with some handsome buildings and fountains, and farther embellished by promenades. It has a church of beautiful Gothic architecture, which for some few years was raised to the dignity of a cathedral: previously to the revolution it was a collegiate church. There were in the town three monasteries for Jacobins, Capuchins, and Cordeliers; three nunneries, of the orders of St. Clara, St. Ursula, and the Visitation; and two hospitals, one for the sick, which was attended by the Nuns Hospitalières, and one for poor girls. There was a college once in the hands of the Jesuits. There was also, in 1804, the ruin of an old castle of the dukes of Savoy, used as a prison. The town possesses a college, or high school, library, museum, and collection of philosophical instruments; also an agricultural society. The manufactures consist of coarse woollens, silk stockings, leather, and clocks and watches, but the latter is not flourishing. An older authority (*Dictionnaire Universel de la France*, 1804) adds to these articles, linen, lace, hats, and combs. The chief trade is in corn, cattle, horses, and the articles of manufacture above mentioned. Its situation, remote from any navigable river, prevents it becoming a place of much commerce. The pop. in 1832 was 7826 for the town, or 8996 for the whole commune.

In the year 1515 Bourg was, by a bull of Pope Leo X., made the seat of a bishopric. The bull was, however, revoked in 1516. In 1521 the town was again raised to episcopal rank; but in 1536 the bishopric of Bourg was finally suppressed.

The arrond. of Bourg contained, in 1832, a pop. of 117,289 persons. Close to the town of Bourg, in the village of Brou, is a church once remarkable for its fine monuments of the family of the Dukes of Savoy; but they were destroyed during the French revolution. Vaugelas, a French writer of some note, and the astronomer Lalande, were natives of Bourg. [Martinière; Expilly; Robert.]

Bourg, called also *Bourg-sur-Mer*, a town and port in the dep. of Gironde, near the confluence of the Garonne and Dordogne, on the right bank of the Gironde riv., which is formed by their united streams. It is about 10 m. above Blaye, which is on the same bank of the riv., and about 15 m. below Bourdeaux, following the course of the Garonne.

This is an antient town. Sidonius Apollinaris, in the 5th century, speaks of it under the name of Burgus, and has written a poem of above 230 lines upon it. It is, however, now inconsiderable. Its chief trade is in the export of the wines of the neighbouring district. Our latest authority for the pop. of the place is the *Dictionnaire Universel de la France* (1804), which gives it at 2200. The hills in the neighbourhood of Bourg yield a greyish white stone (gris blanc), which the inhabitants call bastard marble. Though far inferior in hardness to marble it will take a polish.

Bourg-Argental, a small town in the dep. of Loire, near the border of the dep. of Ardèche. It is close to the little riv. Diaume, which flows into the Cance, a feeder of the Rhône.

Some laces and crapes are made, and silk of dazzling whiteness is prepared here. The pop. in 1832 was 1734 for the town, or 2502 for the whole commune.

This town is not of very high antiquity, but was once more considerable than it is at present. It suffered much in the religious wars of the 16th century. In 1562 it was much injured by the Calvinists, who also attacked it in 1588, when it had scarcely recovered from the effects of famine and pestilence, which had nearly depopulated it in 1585 and 86. The attack was, however, repelled; and a solemn annual procession long commemorated the defeat of the assailants. In 1589 it was taken from the party of the League, in whose hands it then was, and pillaged by the duke of Ventadour; but he was driven from it in 1591 by the duke of Nemours, who replaced it in the power of the League. It had a castle, which was demolished in 1595. (Malte Brun; Expilly.)

Bourg Déols, or *Bourg Dieu*, a town very near Châteauroux, of which it may almost be regarded as a suburb. It is however on the other, viz., the right bank of the Indre. It was once a place of importance, and capital of the principality of Déols. The town appears to have had, at one period, three parish churches and a castle, which in the 10th century Raoul de Déols gave up to the monks of an abbey which his father had founded; and erected for himself a castle at Châteauroux, in the immediate neighbourhood. The abbey flourished exceedingly; and although it fell into ruin at a subsequent period, yet the remains of the buildings were sufficiently superb to show the munificence of its benefactors. In the middle of the last century only part of the building remained in occupation; and the three par. churches had been reduced to one. The pop. in 1833 was 1792 for the town, or 2113 for the whole commune. [CHA TEAUROUX.]

Bourg d'Oisans or *d'Oysans*, a small town in the dep. of Isère, on the road from Grenoble to Briançon, and close to the riv. Romanche, which flows into the Drac, a feeder of the Isère. There is a lead mine in the neighbourhood, and gold is also found. (*Encyc. Method.*) The pop. of the commune in 1832 was 3052.

This little town is seated in a valley in the midst of the mountains, which, branching out from the main chain of the Alps, cover a considerable portion of the dep. Travelling from Grenoble towards the town, there is yet to be seen the dyke of the Lake of St. Laurent, which once covered this valley in its whole extent. The following account of this lake we translate from the *Itinéraire Descriptif de la France* of M. Vaysse de Villiers, quoted in Malte Brun's *Géographie Universelle* (3me. ed.).

This lake owed its existence of two centuries to one of the most terrible accidents to which the valleys of the Alps are exposed. Two rapid streams (*torrens*) rush opposite to each other from the summit of the mountains into the Romanche, at the very spot where this riv. quits the large hollow (*bassin*) of the Bourg d'Oisans to enter the pass. These two streams suddenly swelled, in the 11th century, to such a degree as to carry with them to the bottom of the valley an immense quantity of rock, earth, and gravel, which uniting from the two sides, at last closed up the valley, and the waters of the Romanche, retained by this dyke, rose to the level of it, covering all the valley to the depth of 60 to 80 (French) ft. A relic of the bridge, which may be seen on the road that leads to the Bourg d'Oisans, still points out to travellers the depth of the lake, and consequently the height of the dyke. Formed and cemented by nature, it was nature which destroyed it:—the waters of the lake, which had been undermining it for a long time, at length burst through it, in the 13th century (in Sept. 1229), and rushed impetuously over into the valley below, and from thence into that of the Drac, and finally into that of the Isère. They carried with them all the villages and all the houses which lay in their course, and flooded the city of Grenoble. There was nobody saved except those who had time before the flood came on to take refuge either in the mountains, or in the lofty towers and steeples of the city. all the bridges were overthrown. The first accident had buried the plain of Oisans; the second raised it from its grave. But the catastrophe which overwhelmed it may occur again; the cause always exists, and may, at any moment, lead to the same effect. The violence of the two streams, and the debris of the mountains which they bring with them, may again close up the valley, by opposing a new barrier to the Romanche, and form a new lake, which,

in like manner, could only find an outlet by rising to the height of this barrier.'

Bourg St. Andéol, otherwise *Bourg-sur-Rhône*, a town in the former district of Vivarais in Languedoc, and now included in the dep. of Ardèche. It is on the right bank of the Rhône, about midway between Viviers and Le Pont St. Esprit, in 44° 23' N. lat., and 4° 36' E. long. It is said to owe its name to St. Andéol, who suffered martyrdom in the reign of Septimius Severus, at the commencement of the third century. It was, before the Revolution, the usual place of residence of the bishop of Viviers, and had a seminary for the education of the priesthood, which was in good estimation. The relics of St. Andéol were said to be preserved in the par. church. The tomb which was shown as his was however of pagan origin. This town is situated at the mouth of a small stream, which flows from the mountains of the Vivarais, and throws itself into the Rhône. It carries on some trade by the riv. Pop. in 1832, 3782 for the town, and 4268 for the whole commune.

Near Bourg St. Andéol is a remarkable monument of antiquity, a bas relief, which seems to have been consecrated to the god Mithras, or the sun. It is carved on the face of a calcareous rock, from which a mineral water flows; and beneath it is an inscription in Latin almost effaced. The bas relief is also much defaced; but there may be distinguished a bull which a dog has seized by the neck, while a scorpion and a serpent attack him elsewhere, and a man is apparently about to sacrifice him. Above this group is a figure surrounded with rays and supposed to represent the sun, from which, as well as the inscription, the destination of the monument has been ascertained. Another figure with horns represents the moon. The whole of the bas relief is included in an oblong square, about four ft. and a quarter high, and nearly six ft. and a half wide. The inscription, if the many gaps in it have been rightly filled up, indicates that the monument was dedicated to Mithras by Maxamum and Meminus. The worship of this deity had been introduced at Rome by the soldiers of Pompey on their return from the East, and from thence it spread into the provinces. The monument is supposed to be of the third or fourth century. (Millin, *Voyage dans les Dep. du Midi de la France.*)

BOURGANEUF, a town in France in the dep. of Creuse, not far from the left bank of the riv. Thorion, a feeder of the Vienne, which is a tributary of the Loire. It is 266 m. from Paris by a circuitous route through Limoges. Bourgneuf is in 45° 57' N. lat., and 1° 44' E. long.

The town contains a tower of considerable height built for Zizim or Djim, son of Mahomet II., and brother of Bajazet II., emperors of the Turks. This prince, after having been defeated by his brother in two attempts to dispute with him the possession of the throne, took refuge with the grand master of the Knights Hospitallers, who were then settled at Rhodes. By virtue of a treaty with Bajazet, in which the grand master stipulated carefully to detain his guest, Zizim was sent to France, where he was detained in different castles. Among the other places at which he sojourned during his captivity was Bourgneuf, which was the residence of the grand prior of the Order, of the language of Auvergne. Here he was twice detained; and the tower above mentioned was built for him during his second abode here. It is six or seven stories high, and the walls are so thick as to admit of a spiral staircase being made in them. In the lowest story are the baths which were constructed either by the prince, or out of regard to his eastern habits by those who had charge of him. (Expilly, *Dict.*; *Biog. Univ.*, art. 'Zizim.')

Bourgneuf has two manufactories of porcelain, and one of paper. Tiles are also said to be made here. The pop. in 1832 was 2110 for the town, or 2849 for the whole commune.

The town is the capital of an arrond., which in 1832 contained a pop. of 37,965 (Malte Brun.)

BOURGEOIS, SIR FRANCIS, was the descendant of a family of respectability in Switzerland, where, it has been said, many of his ancestors filled offices of considerable trust in the state. The father of Sir Francis however resided for several years in England, it is believed, under the patronage of Lord Heathfield; and Francis was born in London in 1756. His early destination was the army, but having been instructed, while a child, in some of the rudiments of painting by a foreigner of inconsiderable merit as

a painter of horses, he became so attached to the study, that he soon relinquished all thoughts of the military profession, and resolved to devote his attention solely to painting. For this purpose he was placed under the tuition of Louterbourg; and having from his connexions and acquaintance access to many of the most distinguished collections in the country, he soon acquired considerable reputation by his landscapes and sea pieces. In 1776 he travelled through Italy, France, and Holland, where his correct knowledge of the languages of each country, added to the politeness of his address, and the pleasures of his conversation, procured him an introduction to the best society and most valuable repositories of the arts. At his return to England Bourgeois exhibited several specimens of his studies at the Royal Academy, which obtained him reputation and patronage. In 1791 he was appointed painter to the king of Poland, whose brother, the prince primate, had been much pleased with his performances during his residence in this country; and at the same time he received the knighthood of the Order of Merit, which was afterwards confirmed by the king of England, who in 1794 appointed him his landscape painter. Previous to this he had, in 1792, been elected a member of the Royal Academy.

As a painter Sir Francis cannot be very highly esteemed. While his pictures display a feeling for nature, they equally exhibit the want of power to express it on the canvas; his subjects are often beautiful, and his grouping happy; on the other hand, his drawing is tame and lifeless, his colouring leaden and monotonous, and his touch heavy; and though there is an appearance of labour in the process, the result is insipid and unfinished. He very closely imitated the manner of his instructor.

It is as the bequeather of the Bourgeois collection to the custody of Dulwich college, for the use of the public, that he has most claim to our gratitude. The collection was formed by Noel Desenfans, an eminent picture-dealer, who dying left it to Sir Francis, with whom he had lived in close friendship. Sir Francis, at his death, left it to the widow of his friend, with the greater part of his property, for life; bequeathing 2000*l.* to Dulwich college for the purpose of building a gallery for the pictures, the reversion of which they were to have, together with the rest of the property, charged with expenses of preserving the pictures, and altering and enlarging the chapel. Desenfans had been interred in a chapel attached to Bourgeois's house; but Sir Francis desired in his will that their bodies might be removed and deposited together in a mausoleum in the chapel of Dulwich college, which was accordingly done.

The college was founded by an actor of the name of Alleyn. [ALLEYN.]

The Dulwich gallery, as it is generally termed, comprises upwards of 300 pictures; they are mostly of a cabinet size, and, being in a dim light, and many of them hung somewhat high, they are not seen to the best advantage. The collection however is a fine one, and contains some of the most beautiful specimens of Poussin, Cuyt, Rembrandt, Murillo, Wouvermans, besides other masters. (Lysons's *Environs*; *Gentleman's Magazine* for 1811.)

BOURGES, a city of France, capital of the dep. of Cher. It is situated at the junction of the Auron with the Evre, or as it is written in more modern maps *Levetre*; whose united streams, under the name of *Evre*, fall into the Cher, one of the great feeders of the Loire. This city is indeed situated close to the junction of many streams, for the *Levetre* receives the *Collins*, the *Langis*, and the *Moulon*, either in or just above the town; while the Auron receives the *Tarare* just above the town. Bourges is 120 m. in a straight line due S. from Paris, or 131 m. by the road through *Montargis*, or 144 through *Orléans*. It is in 47° 5' N. lat., and 2° 23' E. long.

This city may vie in antiquity and ancient importance with almost any in France. It was the capital of that branch of the Bituriges which was known, according to Strabo, Ptolemy, and Pliny, by the surname *Cabr.* whereby it was distinguished from the Bituriges *Vivisci*, a branch probably of the same stock which had settled on the lower part of the left bank of the *Garumna* (*Garonne*), and whose capital was *Burdegala* (*Bordeaux*). The Bituriges, according to Titus Livius (*Historiar.* v. 34), were the dominant tribe in Gallia *Celtica* as early as the reign of the Roman king *Tarquinius Priscus*, when their king *Ambigatus* sent out two immense hosts of emigrants under

his nephews Bellovesus and Sigovesus, the former into the north of Italy, the latter into the vast Hercynian forest, which then extended over a considerable part of southern Germany, Hungary, and Poland. In the time of Cæsar they had lost their supremacy, and the Bituriges Cubi were themselves under the protection of the Ædui. At what period their capital, the Gallic name of which, as latinized by Cæsar, was Avaricum, arose is uncertain; but in Cæsar's time it was a place of importance. In the struggle against the Romans, at the head of which was Vercingetorix, near the close of Cæsar's proconsulship, the territory of the Bituriges became the seat of war. Agreeably to the defensive plans of the natives, upon the approach of Cæsar's army, above twenty towns of the Bituriges were given up to the flames, and in a general council it was debated whether Avaricum should be burnt or defended. The Bituriges fell at the feet of all the Galli, and begged 'that they might not be forced to set fire with their own hands to that which was almost the finest city of all Gallia, and the bulwark and ornament of their state. They declared they could easily defend themselves from the advantage of the situation, for the place being surrounded on almost every side by the river or a marsh had but one entrance, and that very narrow.' Contrary to the opinion of Vercingetorix, whose sounder judgment wished to continue the defensive warfare which they had begun, but who yielded at last to their intreaties, and to the general commiseration excited by them, it was resolved that a stand should be made at Avaricum, and a suitable garrison was selected. (Cæsar. *de Bell. Gall.* lib. vii. c. 15.)

Cæsar lost no time in forming the siege of the place; and notwithstanding Vercingetorix pitched his camp about 16 Roman m. off, and afterwards even nearer, he carried on his operations with his usual activity and vigour. The garrison counteracted his efforts with considerable skill, being, as Cæsar described them, 'a people of very great ingenuity, and very ready in the imitation and carrying into effect of any plans which they may acquire from others.' They diverted the attack of the Roman machines, undermined their works, raised their own walls higher with wooden towers covered with hides, so as to keep pace with the towers which the Romans built to assail them, interrupted the operations of the Romans or set fire to their works in constant daily and nightly sallies, and retarded the continuation of the trenches (*apertos cuniculos*) up to the walls of the town. These walls of the town were constructed, with considerable art, of alternate layers or courses of wooden beams and of stone, so as to form a secure defence; the stone preventing them from being consumed by fire, and the wooden beams deadening the shock of the battering ram. In 25 days the Roman works had made considerable progress, when the besieged managed to undermine and set fire to the mound (*agger*) which Cæsar had raised against the walls, and a fierce attack was made by the garrison, which, however, after a most obstinate struggle, was driven again into the town. The garrison in despair now determined on abandoning the place, and it was only when the women, who besought them not to forsake them, gave notice of the design to the Romans by their cries, that they desisted from their purpose. The following day Cæsar observing that the walls were not so watchfully guarded, ordered a general assault, and thus carried the town. The Romans had been exasperated by the massacre of some of their countrymen at Genabum (now Orléans), and by the toilsomeness of the siege; they spared neither age nor sex; old men, women, and children were involved in indiscriminate slaughter; and out of 40,000 persons who had been shut up in the town, scarcely 800 escaped to the camp of Vercingetorix. (Cæsar. *de Bell. Gall.* lib. vii. c. 16—28.)

By what degrees Avaricum recovered from this dreadful blow is not known. Malte Brun says, but does not quote his authority, that Augustus made it the capital of Aquitania. It was improved and fortified by the Romans, and became at an early period of the Christian æra (as we shall presently notice,) the seat of a bishoprick. Of the walls of the old town (which is comprehended nearly on all sides by the new town) some parts remain: these are, as we gather from a comparison of the different authorities, supposed to be Roman works, and are of extraordinary thickness and solidity. Towards the close of the Roman period this town lost its name of Avaricum, (said by some to have been derived from the name of the river Avara or Avera,—the Evre,) and

assumed that of Bituriges. This we find in an old romance of chivalry transmuted into Biorgas, whence the modern name Bourges. (D'Anville, *Notice de l'ancienne Gaule.*) When the Roman Empire fell under the attacks of the northern barbarians, Bourges came into the hands of the Visigoths, from whom it passed to the Franks, in consequence as it seems of the victory of Clovis at Vouillé. The province of Berry, of which Bourges was the capital, became an hereditary fief, under nobles who took successively the titles of counts and viscounts. They at first took their titles from Bourges rather than from Berry. (Piganiol de la Force.)

In the early ages of the French monarchy, Bourges suffered much from the ravages of war, but was repaired by Charlemagne, and afterwards by Philip Augustus (Malte Brun). In the disputes of the Houses of Burgogne and Orléans in the reign of the imbecile Charles VI., it became one of the strong holds of the Orléans party. It was besieged by an immense army under Charles VI. in person, and the siege was very bloody and of long duration. The intervention of the Dauphin put a stop to the attack, and ultimately produced a temporary peace. In the civil wars of the 16th century it was seized and garrisoned by the Hugonots, but betrayed by the commander whom they appointed into the hands of the opposite party.

The town is divided into the old and new towns, the latter including a much larger space, and extending on nearly every side round the old town, which stands on rather higher ground. The two occupy a considerable extent of ground capable of containing a much larger population. The appearance of Bourges shows it to be one of the most antient and worst built cities in France. The streets are crooked; and the gable ends of the houses, which are low-built and roofed with tiles, give to the town a very homely aspect. The new town, according to two drawn plans in the king's library at the British Museum, was surrounded with walls, which included also the old town within their circuit. Malte Brun speaks of Bourges as being now surrounded by promenades called *Les Boulevards Villeneuve* (as he says, from the name of the prefect who made them) these, to judge from their name, probably occupy the site of the walls of the new town. In the short space in which the walls of the old and of the new town coincided, stood an antient tower of immense dimensions, called in the plans above referred to the Tour du Mont Hennant. It was destroyed about the beginning of the 18th century, and the materials used in the erection of the seminary for the priesthood.

Under the old regime of France, Bourges was remarkable for the large proportion of its inhabitants who were included in the classes of gentry, ecclesiastics, and scholars; while the number of persons engaged in trade was comparatively small. Indeed the business carried on in the place was only just what was requisite for the supply of the wants of the population. The multiplication of the gentry may be ascribed to the rank granted by Louis XI. to the chief municipal magistrates, the *maire* and the four *échevins* (mayor and aldermen) of the town, that of the clergy to the number of ecclesiastical establishments of various kinds, and that of the scholars to the university and other establishments for education. The want of trade caused the city to be far less peopled than the extent of its site would have permitted and lead one to expect.

About the middle of the last century Bourges contained, besides the cathedral, of which we shall presently speak, four collegiate and sixteen parish churches: one abbey for men, and two for women, besides other religious houses, which Expilly mentions as being very numerous, but which he delineates giving in detail, on the plea that it would occupy too much space. All these were in a town which it is probable did not contain more than 16 or 18,000 persons. The abbey for men was of the order of St. Benedict, and was reputed to have been founded by Clotaire II., who reigned about the close of the 6th or beginning of the 7th century. The abbey for women, were, one of Benedictine nuns, founded by Charlemagne, whose natural daughter, St. Euphrase, was the first abbess; and one of Cistercian nuns, supposed to have been founded in the 12th century. Among the convents was one for the Annunciate nuns, founded by the Princess Jeanne (Joan), otherwise St. Jeanne, daughter of Louis XI., and wife of Louis duke of Orléans, afterwards Louis XII., who divorced her: she was the institutor of the order of the Annunciation, and the convent of Bourges was the first convent of that order. Besides these institutions, which were in exist-

ence when Expilly wrote, there was one suppressed abbey of the order of St. Augustin, whose revenues were held in commendam; the chapters of two collegiate churches had been united to the seminary for the priesthood. This seminary was under the direction of the religious of the Benedictine abbey.

There was also at Bourges a university of great repute and well frequented. It was said to have been founded by Louis IX. (St. Louis) King of France: but this is doubtful. It was re-established by Louis XI. in 1463. It comprehended the four faculties of theology, law, medicine, and arts. The first and last were for some time in the hands of the Jesuits. These fathers had also a college in Bourges, one of the finest and most extensive in the kingdom. (Expilly, *Dict.*)

The revolution and the political convulsions that have followed since, have of course made considerable changes in this state of things. The cathedral has however escaped the ravages of that stormy period, and is one of the noblest Gothic edifices in the kingdom, and indeed in Europe. It is on the highest spot in the city; and its front, notwithstanding the irregularity of its architecture, is remarkable for the richness of its ornaments and the delicacy of its finish. The ascent to the front is by a flight of steps; and at each end of the front is a lofty tower. Five grand entrances occupy the front; and one of these is adorned with sculptures representing the last judgment. The inside dimensions of the edifice (according to Expilly) are 348 English feet for the length, and 140 English feet for the width, without including the chapels. The vaulted roof of the nave and its side aisles are supported by Corinthian columns (Expilly) of great height and delicacy of workmanship. The town-hall was formerly the house of Jacques Cœur, the richest subject of his time, whose treasures enabled Charles VII. to re-conquer the country that had been subdued by the English in the reigns of Henry V. and VI. Having obtained of him considerable sums, that thankless prince caused or permitted him to be prosecuted for imaginary crimes, or rather for acts that were not criminal, despoiled him of much of his wealth, and Cœur ended his days in a foreign land. Colbert, the celebrated minister of Louis XIV., having come by purchase into possession of this house, gave it up to the municipality of Bourges, who made it the town-hall. The edifice is in the richest style of the architecture of the age in which it was built (the 15th century), and the walls alone are said to have cost 135,000 livres (5400*l.* sterling), a vast sum for those days. The very chimneys are richly ornamented, and are built to resemble the towers and gates of towns. The walls are adorned with sculptures of shells and hearts: these are probably the arms of Jacques Cœur, which Expilly mentions as being carved in several places, and accompanied with his punning motto, *A vaillant Cœur rien impossible*. The archiepiscopal palace is a building of great magnificence: the garden attached to it is used as a public promenade, and contains an obelisk erected to the memory of Bethune Charost, a man whose unbounded benevolence, and whose services to the department of which Bourges is the capital, render him worthy of such a memorial.

There is also an antient palace built by John duke of Berry, son of John II. of France, in the 14th century, or in the beginning of the 15th century.

Since the revolution and the abolition of the privileges of the noblesse, the manufactures and commerce of Bourges have been increased, but not to any great extent, for the population has not much advanced. The *Dictionnaire Universel de la France* (1804) notices a manufactory of saltpetre, and three other manufactories, one of cloth, one of sail-cloth, and a third of linen generally; but Malte Brun affirms that there is not a linen manufactory in the whole department, though a great quantity of hemp is grown. The trade of the town consists chiefly in the produce of the country around, corn, wine, cattle, and hemp. There are several kinds of stone quarried in the neighbourhood. The pop. in 1832 was 17,026 for the town, or 19,730 for the whole commune. The opening of the Canal de Berri which passes through the dep. of Cher, though at a considerable distance from Bourges, is expected to give increased activity to the commerce of this part of France.

Bourges is the seat of an archbishoprick. The diocese is very antient. St. Ursin, said to have been the first bishop, lived about A.D. 252. The archbishop took the title and rank of patriarch, and primate of the provinces of Aquitaine.

As patriarch he claimed jurisdiction over the archbishops of Narbonne and Toulouse; as primate, over those of Bordeaux and Auch, metropolitans of the second and third Aquitaines. As metropolitan, he had at one time eleven suffragans, viz., the bishops of Alby, Cahors, Castres, Clermont, St. Flour, Limoges, Mende, Le Puy, Rhodéz, Tulle, and Vabres: but the bishop of Alby having been raised to the rank of metropolitan, and the bishops of Cahors, Castres, Mende, Rhodéz, and Vabres, made suffragans to him, there remained only five suffragans to the archbishop of Bourges, viz., the bishops of Clermont, St. Flour, Limoges, Le Puy, and Tulle. (Expilly.) These are still his suffragans. The diocese of Bourges includes the departments of the Cher and Indre. There are an *Académie Universitaire*, a *Collège Royal*, or high school, a seminary for the priesthood, and a school for music; besides a society of agriculture, of commerce, and of arts, a rich public library, a cabinet or museum of natural history, and a theatre. There is a *Cour Royale*, or high court of justice, the jurisdiction of which extends over the three departments of Cher, Indre, and Nièvre. Bourges is also the chief place of the fifteenth military division, which comprehends the several departments of Cher, Indre, Allier, Creuse, Nièvre, Haute Vienne, and Correze.

The situation of the town is pleasant. In the neighbourhood there is a mineral spring, called the spring of St. Firmin, or the iron spring; and another in the Faubourg St. Privé, which is recommended for persons afflicted with the gravel. The arrond. of Bourges had in 1832 a pop. of 97,537.

Among the eminent natives of Bourges may be mentioned the celebrated preacher Louis Bourdaloue, born here in 1632; Pierre Joseph d'Orleans, author of the 'Histories of the Revolutions of England and of Spain', born in 1641 (both these were Jesuits); Jacques Cœur, already noticed and the King Louis XI., by whom, as we have seen, the University of Bourges was founded or re-established.

BOURGOGNE (BURGUNDY), prov. of France, and one of the military governments into which that country was divided before the division into departments. The districts of Bresse, Bugey, Valromey, and the Pays de Gex were included in the military government of Bourgogne and in the geographical part of the present article these are considered as parts of Bourgogne. The name of Bourgogne is derived from the Bourguignons, one of the northern nations by whom the Roman Empire in the west was overthrown, and who established on the frontiers of France, Italy, and Switzerland, a kingdom of some extent, though not of long duration. As the account of this kingdom belongs to general history, and not peculiarly to French history, it is given under the article **BURGUNDIANS**, the usual English form of the name. The history and description of the feudal duchy and province which inherited the same designation, we give, as belonging to French topography or history, under the French designation of Bourgogne.

General description of Bourgogne.—Bourgogne was of considerable extent and of very irregular form. Its greatest dimension or length was from N.N.W. to S.S.E., from the neighbourhood of Bar-sur-Seine to the extremity of Bresse, in which direction it extended about 195 m.: the breadth, measured at right angles to the length, varied very much; the greatest measure from near Bourbon Lancy to the neighbourhood of Pontoux being about 90 m., and the least about 30 m. It was bounded on the N. by Champagne; on the E. by the county of Bourgogne, (usually called La Franche Comté,) Switzerland and Savoy; on the S. by Dauphiné and the Lyonnais; and on the W. by the Bourbonnais, Nivernais, and Orléannois.

The country thus bounded comprehends portions of the basins of three of the principal rivers in France, the Loire, the Rhône, and the Seine. The W. part is watered by the Arroux, the Bourbince or Brebine, the Reconce and other smaller streams, which flow immediately or ultimately into the Loire, and by the Loire itself for a short distance; the E. part is watered by the Vingeanne, the Tille, the Ouche, the Dheune, the Doubs, or as it is written in maps of 70 years since, the Doux, the Seille, the Grosne, and others, tributaries of the Saône, and by the Saône itself, a considerable part of the course of which is in Bourgogne; the N. parts contain the source of the Seine, the sources of the Oure, the Armançon, the Serain, and the Cure, all of which, and part of the course of the Yonne, ultimately unite

with the Seine. The district of Bresse is bounded on the S. by the Rhône, and watered by the Ain which falls into the Rhône. These three basins are separated from each other by a range of hills which, entering Bourgogne from the S., from the district of Beaujolais, run nearly due N. to the neighbourhood of Château-Chinow, separating the basins of the Rhône and the Loire, and at Château-Chinow divides into two parts, one of which running N.W. separates the basin of the Seine from that of the Loire; while the other, which includes the Côte d'Or, runs N.E. towards Langres and the Chain of the Vosges, and separates the basin of the Seine from that of the Saône, or more properly the Rhône. Two important canals cross the country; one, *Le Canal du Centre* or *du Charollais*, unites the Loire at Digoin near Charolles with the Saône at Châlons sur Saône; the other, *Le Canal de Bourgogne*, unites the Saône at St. Jean de Losne with the Yonne, between Auxerre and Joigny, following very nearly the course of the rivers Ouche and Armançon.

Watered by so many rivers, possessing a fine climate and fertile soil, Bourgogne may be regarded as one of the districts of France most favoured by nature. Grain of all kinds is plentiful, vast numbers of sheep are fed in the pasturages, and the forests yield timber for the builder and the shipwright, and fuel. Hemp, fruit, fish, and game, are plentiful: but the principal article of produce is wine, which is among the very best in France. The following wines may be mentioned as of the finest quality: the red wines of Auxerre, La Romanée-Conti, Chambertin, Richebourg, Clous-Vougeot, La Romanée-Saint-Vivant, La Tache, St. George, Corton, Les Torins, and Chenas; and the white wines of Puligni (growth of Montrachet), Pouilly and Fuissey. The wines of the district are known by the general name of *Vin de Bourgogne* (Burgundy wine). For further information as to the natural features, productions, trade, &c. of Bourgogne, see AIX, AUBX, CÔTE D'OR, SAÔNE and LOIRE, and YONNE, among which department this extensive and valuable territory has been shared. (Malte Brun, *Dict. Univ. de la France*.)

Bourgogne, in the extent we have been considering it, was formerly divided into the prov. of Bourgogne properly so called, and the three dependent districts of Bresse, Bugey (including Valromey), and Gex. The prov. of Bourgogne was again subdivided into the Duchy so called, (comprehending Le Dijonnois, L'Autunois, Le Châlonois, (or districts of Dijon, Autun, and Châlons,) L'Auxois, and Le Pays de la Montagne,) and the dependent counties of Le Charollois, Le Mâconnois, L'Auxerrois, and Bar sur-Seine; which counties took their names from the towns of Charollois, Mâcon, Auxerre, and Bar. (Garreau, *Description de Gouvernement de Bourgogne*.)

The principal towns of this important government, of which Dijon was the capital, with the river on or near which they stand, and their pop. in 1832, so far as we can ascertain it, we give for convenience sake in a tabular form. Where two numbers are given for the pop., the first is that of the town itself (*population agglomérée*), the second that of the whole commune.

	Pop.	Totals.
Arnay-le Duc, near the Arroux	2,416	2,563
Avalon, on the Voisin, a branch of the Cure	5,089	5,569
Autun, on the Arroux	8,610	9,921
Auxerre, on the Yonne	10,989	11,439
Auxonne, on the Saône	3,477	5,287
Bar sur Seine, on the Seine	2,269	9,272
Beaune, on the Bouzoin, a branch of the Dheune	—	9,908
Bourbon Lancy, near the Loire, about Bourg, on the Reys-souse, a feeder of the Saône	7,826	8,996
Bellefleur, near the Furaud, a feeder of the Rhône	3,550	4,286
Châlons sur Saône, on the Saône	—	12,220
Charolles, on the Reconce	2,781	2,984
Châtillon sur Seine, on the Seine	3,689	4,175
Dijon, on the Ouche	25,352	25,552
Gex, near the Valserine, a feeder of the Rhône	1,750	2,834
Jean, (St.) de Losne, on the Saône	—	1,744
Mâcon, on the Saône	—	10,998
Nuits, on the Meuzin, which unites with the Bouzoin and flows into the Dheune	—	—
Saulien, near the head of the Creuseaux, a branch of the Arroux	—	3,050

	Pop.	Totals.
Lemur en Auxois, on the Armançon	3,985	4,088
Semur en Briennois, near the Loire	—	—
Seurre, on the Saône	3,571	3,591
Viteaux, on the Brenne, a feeder of the Armançon	1,904	1,919

For an account of the above-mentioned places, we refer the reader to their respective articles, for the larger towns the others, so far as they call for notice, will be found in the account of the departments of CÔTE D'OR, and SAÔNE AND LOIRE.

The history of Bourgogne presents perhaps more points of interest than that of any other district in France.

History of Bourgogne—Celtic period—The Ædui.—When Cæsar invaded Gaul, Bourgogne, for the most part, was the territory of the Ædui, whose capital Bibracte, afterwards Augustodunum, was the modern Autun. Portions however were occupied by other tribes; as Bresse and Bugey by the Ambarri (dependents of the Ædui), and by a part of the Allobroges, and of the Sequani, which last people also occupied those portions of Chalonnois and Le Dijonnois, which were on the left or S.E. bank of the Arar or Saône. The Lingones possessed parts of Dijonnois, including Dijon itself, and of L'Auxois, and Le Pays de la Montagne; while the Senones possessed L'Auxerrois, and the Mandubii, a small tribe, part of the Auxois, and the Auleri Brannovices part of dependents of the Ædui, the Briennais, which is part of the duchy of Bourgogne.

Of these people, who were all of the great Celtic race, the Ædui were the most important. They had been, long before Cæsar's arrival, the head of one of those factions, into which, with a remarkable propensity to party division, the Celts were separated. Their principal rivals were the Arverni and the Sequani (who inhabited, respectively, Auvergne and La Franche Comté), but they maintained the predominance so long as the contest lay between them and the other people of the Celtic race. Their power seems to have been confirmed by their alliance with the Romans, who had gradually subdued that part of Gallia which lay to the S. and E. of the Rhône and the Mons Cebenna (Cevennes Mountains). Shortly, however, before Cæsar's arrival, the Arverni and the Sequani, despairing to make head successfully against the supremacy of the Ædui, determined to call in the Germani to their aid; and a large body of these, crossing the Rhenus (Rhine), utterly defeated the Ædui and their dependents in two battles, in which the vanquished lost all their senate, all their nobility and all their cavalry. The Ædui were compelled to give up as hostages the chief men of the state, and to swear that they would neither seek aid of the Romans nor refuse perpetual submission to the victorious Sequani. (Cæsar de B. G., i. 31, vi. 11, 12.) While in this depressed condition, the Helvetii (Swiss), the most warlike of the Celtic nations, with their allies, abandoning in a body their native country, set out for the shores of the Atlantic (the country of the Santoni, Saintonge), where they determined to settle. Their road lay through the country of the Ædui, which they ravaged, without encountering any effectual opposition. The only hope of this wretched nation was now placed in their Roman allies: and they sent ambassadors to Cæsar, who had just entered upon the government of the Roman provinces of Gallia Citerior, and Ulterior Illyricum (which comprehends the N. of Italy and the S. of France), pleading 'that they had always so conducted themselves towards the Romans that their lands ought not to have been wasted, their children led into slavery, and their towns stormed almost under the eyes of the Roman army.' (Cæs. de B. G. i. 11.) Their request was complied with: Cæsar marched against the Helvetii, cut off their rear guard while on the point of crossing the Arar, and in a second engagement entirely defeated them with great slaughter, and compelled them to return home. He then, by the desire of the Ædui and other Celtic people, led his victorious army against the Germans and defeated them, their king Ariovistus escaping across the Rhine, with a very few survivors of his numerous army.

During the greater part of Cæsar's command in Gaul, the Ædui appear to have adhered steadily to the interests of the Romans; but in the general revolt which took place in the seventh year of his government, they were induced to join their countrymen in the struggle for national independence. A body of their troops under Eporedorix and Verdurmarus (who had been sent by Cæsar when he

knew of the revolt of their countrymen). took possession of Noviodunum (Nevers), where Cæsar had deposited the hostages of the Galli, as well as the corn, money, and baggage for his army; and having carried away the hostages, divided the spoil and burnt the town. Cæsar forthwith crossed the Liger (Loire) by a ford and marched E. towards the country of the Sequani, while the Galli held a general council at Bibracte (Autun) to determine to whom the chief command should be intrusted. The Ædui had required that it should be given to them, but the confederates preferred the tried courage and skill of Vercingetorix, the Arvernian; and the Ædui, though mortified, were obliged to submit. The war now assumed a very serious character, and the affairs of the Romans were in a most critical situation. The Ædui and their allies were however defeated in an engagement of the cavalry, with the loss of Eporodix and some other men of note who were taken prisoners: and the main body of the confederates retired, closely pursued by the Romans, to Alesia (Alise, or rather a mountain near Alise, a little town of the Auxois in Bourgogne), under the walls of which, in a very strong position, the Galli encamped. Vercingetorix, dismissing his cavalry to their respective states, with directions to gather all their forces and come to his relief, remained with eighty thousand chosen men to sustain the siege which Cæsar had already begun, and endeavoured by economy and wise management to make his scanty store of provisions last till the return of his countrymen.

Cæsar, aware of the inadequate number of his forces to guard lines of circumvallation of the extent required to hem in the enemy's army, if constructed in the usual manner, took unusual pains in strengthening his lines. The besieged were reduced to great distress for want of provisions; but their spirit was unbroken, and they determined in a general council, if no relief came, to kill those whom age rendered unfit for war, and to feed upon their carcasses rather than to surrender. At last the unexpected succours came, to the number of two hundred and forty thousand infantry, and eight thousand horse. Repeated attacks were made upon the Roman entrenchments both from within and without, but in vain: the relieving force was defeated with dreadful slaughter and dispersed, and the besieged were left to their fate.

In this extremity the gallant Vercingetorix summoned a council of his countrymen, declared that he had undertaken the war, not from any peculiar interest of his own, but for the general liberty of the country; and that as they must now yield to their destiny, he was willing to be the sacrifice to the general good, whether they chose to satisfy the Romans by putting him to death, or to deliver him up alive to the enemy. They chose the latter course: and Vercingetorix was put into the hands of Cæsar. The Ædui submitted and obtained better terms, so far as can be judged, than they had reason to expect: their persons were restored; and when they had passed, with the rest of their countrymen, under the dominion of Rome, they seem to have still been treated with peculiar distinction. The capture of Alesia took place in B.C. 51.

Bourgogne under the Romans.—Upon the division of Gallia into four provinces by Augustus Cæsar, the districts afterwards comprehended in Burgundus formed part of Gallia Lugdunensis; and upon the subdivision by the Emperor Probus, were mostly included in Lugdunensis Prima. Some portions were however comprehended in Lugdunensis Quarta, and Maxima Sequanorum, which last division had been, according to the arrangement of Augustus, included in Gallia Belgica, though the inhabitants of it were of Celtic race.

First Kingdom of Bourgogne.—Early in the fifth century the Burgundians, a branch of the Vandals, one of the people occupying the antient Germany (under which name was comprehended the country from the Rhine to the Borysthenes), who had gradually approached the Roman frontier, crossed the Rhine into Gallia, and established themselves there. This was probably about A.D. 407; and in a few years they so far spread their conquests that they gave name to the first kingdom of Bourgogne of Burgundy, comprehending the whole S. E. of France, and extending beyond the Rhône, and even the Loire. This kingdom was conquered (A.D. 534) by the Frankish princes, descendants and successors of Clovis, viz., Childebert, king of Paris, and Clotaire, king of Soissons, and perhaps Theodebert, king of Austrasia. [BURGUNDIANS.]

Second Kingdom of Bourgogne.—In 555 Clotaire, the

sole successor of the race of Clovis, reunited under his own sway the portions of the kingdom of the Burgundians which at the conquest had been allotted to the victorious princes: and in 561 Goutran, his son, who succeeded to the kingdom of Orleans, and to a portion of the territory of the Burgundians (but much of what these people had subdued was attached to the kingdom of Austrasia), took the title of king of Bourgogne, and fixed his usual residence at Châlons sur Saône. It is needless to trace the history of this kingdom in the confused period which followed; sometimes it was united with its sister kingdoms, Neustria, Austrasia, and Soissons, or with one or two of them; at others it was separate and single. It followed the fortune of war or of inheritance, and its boundaries varied also according to circumstances. From the year 613 or 614 it was constantly united with one or more of the other kingdoms of the Franks.

To the weakness and incapacity of the Merovingian princes succeeded in 745 the more vigorous government of Pepin le Bref (the Short). Upon the division of the territories of Pepin between his sons Carloman and Charles or Charlemagne, the kingdom of Bourgogne fell to the former, but upon his death became part of the widely-extended empire of Charlemagne. In the partition of this empire, after a bloody war, among the children of Louis le Debonnaire, son and successor of Charlemagne, A.D. 843, the kingdom of Bourgogne was divided; the part W. of the Saône fell to the lot of Charles le Chauve (the Bald), the part E. of the Saône to the Emperor Lothaire.

Supposed Third Kingdom of Bourgogne.—In the division of the territories of the Emperor Lothaire between his three sons, some authors have asserted that one of the kingdoms resulting from the division was called the kingdom of Bourgogne. This kingdom comprehended what has since been known as the governments of Dauphiné and Provence, which had been included in the kingdom established by the Burgundians in this part of Europe, and had been also partially included in the second kingdom of Bourgogne under the Merovingian Goutran. But Plancher in his *Histoire de Bourgogne* asserts that this kingdom bore the name, not of Bourgogne, but of Provence; and although it was within the limits of the antient kingdom of Bourgogne, it does not appear to have included more than a very small part, if any, either of the province of Bourgogne as described at the beginning of this article, or of the county of Bourgogne or Franche Comté. Those portions of the province of Bourgogne which were in the dominions of the Emperor Lothaire (Bresse, Bugey, &c.), were included in the kingdom of Austrasia, which came to Lothaire, second son of the emperor, and which took from him the name of Lotharingia, whence the more modern name of Lorraine. This portion of Bourgogne underwent various changes in following years. That part of Bourgogne which was comprehended in the dominions of Charles le Chauve passed by succession to his son Louis le Begue (the Stammerer), and in the partition of the states of this prince it fell to the lot of Carloman. It continued ever after, when the dominions of Carloman and his brother Louis II. were united into the kingdom of France, to be a portion of that kingdom.

Supposed later Kingdoms of Bourgogne.—Bourgogne Cisjurane, Bourgogne Transjurane, Arles. It has been already noticed that in the partition of the states of the Emperor Lothaire, A.D. 855, one of the kingdoms, that of Provence, formed by the partition and allotted to Charles, the youngest son of Lothaire, has been incorrectly styled by some the kingdom of Bourgogne. This kingdom was of short duration, ending with the life of its first and only king, A.D. 863. In 879 another kingdom of Provence, to which some authors give the title of Bourgogne Cisjurane, was formed by Boson, a powerful French noble. It comprehended Provence, Dauphiné, and afterwards part of the Lyonnais and Viennois.

During the troubles that succeeded the death of Charles le Gros (the Fat), king of France and emperor of Germany, under whom the empire of Charlemagne had been reunited, a kingdom was formed by the successful ambition of Rodolph, one of the nobles of that country (comprehending the various countries east of the Saône included in the former kingdom of the Burgundians), to which the various and extensively applied name of Bourgogne Supérieure, or Upper Burgundy, was given. This kingdom was called Bourgogne Transjurane, and comprehended Switzerland and some smaller districts. Rodolph, its first king, was elected in 888.

About A.D. 930 these kingdoms were united in the person of Rodolph II. king of Bourgogne Transjurane. He was competitor with Hugues, king of Provence, for the dominion of northern Italy; and Hugues, to secure the peaceable possession of this, ceded to Rodolph, with certain reservations, his own original kingdom of Provence. The two kingdoms thus united were called the kingdom of Gaule Cisalpine and Bourgogne Jurane, and, in after ages, the kingdom of Arles. This kingdom may be considered as terminating in the year 1032, when it came into the hands of Conrad, the Salic emperor of Germany. After this time the kingdom of Arles was divided into provinces which formed part of the Germanic empire, or owed feudal subjection to it. Some writers consider that Boson and his successors in the second kingdom of Provence bore the title of kings of Arles before the union of the kingdoms of Provence and Bourgogne Transjurane.

County of Bourgogne or Franche Comté.—Although the history of this district belongs rather to *Franche Comté*, yet it formed no part of the kingdoms of Bourgogne Transjurane and Arles. It was part of the kingdom of Austrasia, given A.D. 835 by the Emperor Lothaire to his son of the same name as already noticed. It was divided for a time upon the death of Lothaire the younger, and being reunited afterwards formed part of the kingdom of Germany. Upon the death of Louis III. king of Germany (A.D. 912), it came by succession to Charles *le Simple*, king of France; under whom the county of Bourgogne, consisting at first of the city of Besançon, and some surrounding districts, was erected A.D. 915 in favour of Hugues, the first count.

Duchy of Bourgogne—Earlier Dukes.—The Duchy de Bourgogne consisted of a considerable part of the territory which has been described at the commencement of this article, with some adjacent territories which were long ago disjoined from it, as the city of Langres in Champagne, and the city of Nevers, with its surrounding district of the Nivernois. Some add also the city of Lyon; but the dukes of Bourgogne seem never to have exercised any authority in virtue of their title over that city, which therefore cannot be regarded as part of their domain.

It appears then that the name Bourgogne as given to a country has had very different applications. We have 1. The original kingdom, comprehending not only the district which is the particular subject of this article, but also the whole S. E. of France and Savoy. 2. After the extinction of this kingdom, the name of Bourgogne appears to have been given to the districts composing it, though there was no jurisdiction exercised over it under that title except in the case of the second and later kingdoms, to which, whether correctly or not, its name is given. Of these later kingdoms, that formed by Goutran in the 6th century appears to have been the only one which was nearly coextensive with the original kingdom. Those of later date comprehended only certain portions of that kingdom to the E. and S. of the Rhône and Saône. 3. The county or the Franche Comté. 4. The Duchy, nearly coincident with that part of the province or military government of later times which lies N. W. of the Saône, and which, be it observed, was from the time of Charles *le Chauve* part of the kingdom of France. 5. The province including the Duchy, the districts of Brasse, Bugy, &c.

The earliest dukes or governors of Bourgogne under the Frankish princes were revocable at the pleasure of the sovereign; but in process of time their dignity and authority became hereditary, and from Richard *le Justicier* (brother of Boson king of Provence, already mentioned), who held the title of duke in the latter part of the 9th century, the dignity descended by inheritance to Henri (brother of Hugues Capet king of France), in the middle and latter part of the 10th century. But although the practice of inheritance thus grew up, it was not yet recognised as legal; it was rather a concession made by the weakness of the kings to the fast-increasing power of the great nobles. Hugues Capet, however, there is good reason to suppose, granted the Duchy as an hereditary and proprietary dignity to his brother Henri. On the death of Henri, Bourgogne came into the hands of Otta-Guillaume, his step-son, and from him again it passed (A.D. 1015), either by force or concession, to Robert, king of France, son of Hugues Capet. Robert granted the Duchy to his son Henri, who succeeded him on the throne of France as Henry I., and thus reunited the ducal coronet with the crown.

First race of Dukes of the blood royal of France.—Robert,

the son of Hugues Capet, is said to have bequeathed the Duchy of Bourgogne to his younger son Robert, Henri the elder son becoming king of France. After a dispute and war between the brothers, the testamentary disposition of the late king was confirmed, and Robert became Duke de Bourgogne and founder of the first royal race by which that dignity was held. Eudes, one of his descendants, died on a pilgrimage to the Holy Land A.D. 1102, soon after the time of the first crusade. Another of his descendants, Hugues III., visited the Holy Land as a crusader in 1171, and again he accompanied Philippe Auguste, king of France, in the crusade which he undertook in 1190-91, in conjunction with Richard I. of England. Upon the return of Philippe to France, after the capture of Acre, the duke of Bourgogne was placed at the head of the French crusaders who remained in the Holy Land, and by his fear or jealousy prevented the advance of the Christian army when within sight of the city of Jerusalem. He withdrew with his crusaders to Tyre, where he died in 1192. Another of this race, the Duke Eudes III., engaged in the war against the Albigenes, or, as Plancher expresses it, 'he took the cross in 1209 and joined the other lords, who, for the love of truth and zeal for the Catholic religion, took arms to beat and destroy the Albigenes, heretics so much the more dangerous, as they affected to follow an apostolic, penitent, and altogether disinterested life.' The same Eudes was present at the great battle of Bouvines in Flanders, A.D. 1214. The Duchy of Bourgogne, considerably augmented by different acquisitions, came by inheritance to Jean II., king of France, in the year 1361, upon the death of Philip of Rouvre, last duke of the first race of the blood royal of France. It was during the sway of this first race of dukes that several of the towns of Bourgogne acquired municipal rights and constitutions; and their deputies took their seats in the assemblies of the states of Bourgogne, of which they constituted the third component body, *le tiers état*.

Second race of Dukes of Bourgogne of the blood royal of France.—These princes played a much more important part than the preceding.

Philippe le Hardi, fourth son of Jean II., king of France, received from his father (Sept. 1363) the Duchy of Bourgogne, to be held by him and his lawful heirs; and the grant was confirmed in 1364 by Charles V., son and successor of Jean II., and brother of Philippe. The duke was distinguished by courage; he was present when only fifteen at the battle of Poitiers, where he was taken prisoner, and he held command in the armies of his brother in the wars which he carried on against the English. He married Marguerite, daughter and heiress of the count of Flanders, and upon the death of his father-in-law came into possession of the Comtés de Flanders, Artois, Bourgogne (Franche Comté), Rethel, and Nevers; by prudence and mildness he calmed the troubles which had agitated Flanders. Upon the death of Charles V. he was one of the guardians of the new king, Charles VI., who came to the throne a minor, and afterwards had the government of the kingdom when that prince became a lunatic.

In the year 1396 he sustained a severe blow in the captivity of his son, Jean, count of Nevers, who conducted a troop of the choicest of the young nobility of France to the succour of Sigismund king of Hungary against Bajazet or Bayazid, sultan of the Turks. In this troop, more eminent for high birth than for numbers, were the Count d'Eu, constable of France, Jean de Vienne, admiral of France (who had formerly defended Calais against Edward III. of England), *Le Maréchal de Boucicaut*. Confident in their courage, they rashly engaged near Nicopolis on the S. bank of the Danube with the vastly superior forces of Bajazet, and were either killed or taken prisoners. "The defeat of this presumptuous band involved that of the whole Christian army, of which they formed the advanced guard. The aged and heroic De Vienne perished in the field; the duke of Nevers, the constable, De Boucicaut, and a few others of the highest rank were ransomed; the greater part of the prisoners were massacred in cold blood by Bajazet's order. Philippe le Hardi died in 1404, aged sixty-three.

Jean, duke of Nevers, who had obtained the name of *Sans-peur* from his undaunted demeanour when before Bajazet, came to the dukedom of Bourgogne on the death of his father, being then thirty-three years of age. He succeeded also to the rivalry which had existed between his father and Louis, duke of Orleans, brother of the imbecile Charles VI. These princes had disputed the government,

and the duke of Bourgogne had obtained the superiority. But on his demise the duke of Orleans had held sway until, by an unexpected march upon Paris, A.D. 1405, Jean Sans-peur obtained possession of the king's person and of the capital, which was devoted to his interest. A reconciliation was effected, and the princes carried themselves with every appearance of cordiality to each other. But these appearances were deceitful: the duke of Orleans was assassinated in the streets of Paris, and after dissembling for a few days, the duke of Bourgogne confessed that he was the author of the foul deed, 'at the instigation,' as he said, 'of the Devil.' Various causes have been assigned for this atrocity: political rivalry, revenge for an insult offered to his honour as a husband, the desire of anticipating a similar attempt which the duke of Orleans was devising, are variously assigned. At first the duke of Bourgogne appeared to feel shame, if not remorse, for this murder, and retired to his own dominions; but growing bolder, he justified the act, charged the late duke of Orleans with disloyalty, and returning with an armed force to Paris, procured, under the king's hand and seal, a pardon for what had lately happened to the duke of Orleans. The kingdom now became divided into two factions, the Bourguignons or Burgundians, and the Armagnacs.

A war with the Liégeois called away Jean Sans-peur from Paris, and enabled the opposite faction to obtain a short-lived supremacy. The people of Liège, irritated by the neglect of their bishop elect, brother-in-law of the duke, had elected another bishop. The disputed crosier was contested, not in an ecclesiastical court, but in the battle-field. Jean Sans-peur gained a great victory on behalf of his brother-in-law, who acquired by his cruelty after the victory the odious and un-episcopal surname of 'Sans pitié.' Jean now returned to Paris; his opponents retired before him, and abandoned the city, but removed the king. A treaty was however negotiated, and a forced reconciliation between Jean and the children of the murdered prince took place at Chartres in 1409. Jean retained his supremacy, and his triumph seemed to be completed by an alliance which he formed with the Queen Isabella of Bavaria.

The opposite party however gathered strength; and though hostilities were not absolutely declared, armed bands, gathered by each faction, used great license in the country. A temporary accommodation, concluded at the palace of the Bicêtre (originally Winchester, or in French, Vincheestre), A.D. 1410, was only a prelude to more serious disturbances. Open hostilities took place, and the duke of Bourgogne allied himself with the king of England, Henry IV., who was however detached from his interest, and won over to that of the princes. Another accommodation, negotiated at Bourges (A.D. 1412), restored some appearance of tranquillity to France. Jean still seems to have retained predominance, at least in the capital, which was the residence of the king and the dauphin, and where his partisans, composed of the vilest of the rabble, committed great disorders. Hostilities breaking out again, he was afterwards compelled to leave Paris, where his opponents established themselves. Not content with this, they pursued the duke, who had assembled his troops and returned to the neighbourhood of Paris, but had retired on finding it was defended. Another peace, that of Arras, put an end to these disturbances for a time (A.D. 1414): Jean was excluded from the capital, and though still powerful, was no longer predominant.

In 1415 Henry V. of England invaded France, and in the great battle of Agincourt the flower of the Armagnac party fell. Jean upon this marched toward Paris, but with strange irresolution stopped short at Lagny, and being ordered by the Constable, the Count d'Armagnac, to retire, did so. The tyranny of the constable however soon caused the Parisians to embrace again the Bourgognon interest: they opened the gates in the night to the captains of that party, upon whose entry the rabble again signalized their ferocity by the massacre of the Constable d'Armagnac and others. Jean entered Paris some time afterwards, and was compelled to witness further massacres by the mob in his interest, whom he could not restrain. His life and power were however approaching their close. Jean, with his ally the queen, having the king in his power, was at enmity with the dauphin, who had become chief of the Armagnacs. He tried to negotiate with the king of England, who, amidst the disputes of faction, was extending his conquests in France, and had just taken Rouen (A.D. 1419). Failing however in this negotiation, he attempted a reconciliation

with the dauphin, in an interview with whom, at the bridge of Montreuil-sur-Seine, he was assassinated 10th Sept. 1419. His body, after remaining all night naked and exposed on the ground, was carried in a pauper's bier to the church of Notre Dame, in Montreuil, from whence it was removed, in the course of the following year, on the capture of Montreuil by the Bourguignons and the English, to Dijon, and buried in the church of the Carthusians there.

Philippe, surnamed *le Bon*, the son of Jean Sans-peur, succeeded to the duchy, being then twenty-three years of age. The general cry for vengeance against the assassin of the late duke, co-operating with the solicitations of Isabelle de Bavière, queen of France, as well as with his own feelings, prompted Philippe to offer his alliance to Henry V. of England. Henry was too skilful a politician to refuse the offer, and a treaty was concluded between the two princes, the object of which was the ruin of the dauphin. The duke in consequence assembled troops, reduced all the towns that lay in his way, joined the English forces, reduced Montreuil, and entered Paris by the side of Henry V. Some time afterwards Philippe attacked St. Riquier on the Somme, then one of the strongest places in Picardy, and took prisoner with his own hand Xaintrailles, or Saintrailles, a celebrated French captain, who attempted to relieve it.

On the deaths of Henry V. of England and Charles VI. of France in 1422, the regency of France during the minority of Henry VI., son of Henry V. (to whom, by virtue of the treaty of Troyes, the succession of the French crown fell), was offered to the duke of Bourgogne; but he declined it in favour of John duke of Bedford, uncle of the young king. The marriage of Bedford with the sister of Philippe rendered their union closer; but that union had nearly been broken up by a dispute and a war between Jean duke of Brabant, cousin to Philippe, and Humphrey duke of Gloucester, a younger brother of Bedford. Jacqueline, heiress of Brabant, Holland, Zealand, and Friesland, had married Jean, and brought to him the rich inheritance just mentioned; but mutual wrongs produced a separation, and a divorce had been obtained on the plea of consanguinity. The duke of Gloucester married the divorced Jacqueline, and by virtue of this marriage claimed her inheritance, and embarked a considerable force to take possession of it. The duke of Bourgogne took up the cause of the Duke Jean of Brabant, gained several advantages over the English, and took Jacqueline (who had been abandoned by Humphrey) prisoner. She escaped; but afterwards, Duke Jean being dead, and Duke Humphrey having divorced her, she got her domains under the administration of the duke of Bourgogne, to whom, upon her death in 1436, the whole descended in full possession. Philippe acquired by bequest in the same year the county of Namur, and thus became one of the most powerful princes of Western Europe.

Various circumstances had tended meanwhile to cool the attachment to the interests of England; and he had more than once negotiated openly or secretly with Charles VII. In 1429 he negotiated a truce for his own provinces. He did not however then entirely abandon the English, to whom his alliance was now more than ever necessary, though his own power having much declined; and he even accepted the office of lieutenant-general of the kingdom, under Henry VI., the duke of Bedford resigning his general authority as regent, and reserving only the government of Normandy. It was about this time that the duke of Bourgogne instituted the order of the Golden Fleece, on occasion of his marriage at Bruges in January, 1430, with Isabelle of Portugal.

In the same year, 1430, the duke took the field on the side of the English, and captured several towns in Picardy. On the capture of Compiègne, the Maid of Orleans fell into the hands of his followers: her subsequent fate is well known. About this time the Duke Philippe engaged as an auxiliary in the contests about the succession of Lorraine, and his troops took René of Anjou one of the claimants prisoner. The death of the duchess of Bedford, sister of Philippe, in 1432, weakened the ties which bound him to England, and the negotiations of Arras and the death of the duke of Bedford in 1435 dissolved it. Peace was concluded between Charles VII. and Philippe; the former disavowing the murder of the Duke Jean Sans-peur, and promising to punish the murderers, and ceding to the latter several districts adjacent to his present domains. Some authorities state that the death of the duke of Bedford did not reverse

this treaty, but that it was occasioned by grief at the hearing of it.

Upon the peace of Arras the duke of Bourgogne assisted by his troops in the recovery of Paris from the English; and in 1436 or 1437 he attacked Calais, which he attempted unsuccessfully to wrest from his late allies. Following years were occupied by troubles in the Netherlands, where the contest between the rich burghers of the great manufacturing towns and their feudal lords was continually renewed. Philippe was wounded at Bruges, and had great difficulty in quelling the disturbances.

The year 1440 was distinguished by the closing of the breach between the houses of Orléans and Bourgogne. Philippe, moved it is supposed by the activity of character which had been unexpectedly developed by Charles VII., and desiring to strengthen himself against it, procured the release of the duke of Orléans, son of that duke who was killed in Paris by Jean Sans Peur, and gave him his niece Mary of Cleves in marriage.

After a campaign against the people of Luxembourg, who had disregarded the authority of their countess, who was aunt of Philippe, the duke was involved in fresh troubles in the Low Countries. The people of Ghent revolted, decapitated some of the duke's officers, and marched against Oudenarde. Successive defeats humbled the high spirit of these burghers, and negotiations were commenced; but the people of Ghent violated the treaty, and the war assumed the character of a war of extermination. At length, in 1451, Philippe defeated the rebels in a great battle; more than 20,000 of the vanquished fell by the sword or were drowned in the Scheldt; but the clemency of the victor was displayed in granting easier terms than could be expected. The Ghentois were severely mulcted and deprived of a part of their privileges; but we do not read that any blood was shed.

The capture of Constantinople, in 1454, caused a great sensation in Europe; and Philippe among others was much alarmed at the advance of the Ottoman power. At a great entertainment at Lille, he took a solemn oath that if the king of France would maintain peace in his dominions, he would go against the great Turk and engage with him either in personal or general conflict. The poverty of Philippe, the consequence of his magnificence and profusion, prevented the fulfilment of this vow.

In the troubles which disturbed the latter part of the reign of Charles VII., the dauphin Louis, afterwards Louis XI., took refuge in the dominions of the duke of Bourgogne, who assigned to the fugitive a handsome maintenance. The old age of Philippe himself was imbittered by a similar cause to that which darkened the close of Charles's reign—a disagreement with his son the count of Charollois. This young prince, whose character afterwards obtained for him the epithet of *le téméraire*, or 'the rash,' had many disputes with his father, and occasioned him much vexation. A difference with his former protégé the dauphin, who had succeeded Charles VII., and was now king under the title of Louis XI., occasioned by an attempt on the part of Louis to extend the gabelle into the dominions of Philippe, and some fresh troubles in the Low Countries, further imbittered the duke's declining years. Philippe died at Bruges in 1467, having governed the ducal possessions, which he had considerably augmented, for nearly forty-eight years. He appears to have possessed at the time of his death the duchy and county of Bourgogne (the modern Bourgogne and Franche Comté); the duchies of Brabant, Limbourg, and Luxembourg; the counties of Hainault, Holland, Zealand, and Namur; the marquise of Antwerp, and the lordships of Friesland and Malines: in a word, nearly all the countries now comprehended in the kingdoms of Holland and Belgium. He appears to have been a prince of many shining qualities, the encourager of learning and of the arts. He patronised Jean Van Eyck of Bruges, the discoverer or inventor of oil-painting, and caused his pictures to be copied in tapestry; the only manufactures of which then in existence were in his dominions. The library of Bruxelles and the university of Dole seem to have owed their origin to him. Erasmus regarded Philippe as worthy of comparison with the greatest men of antiquity; and Philippe de Comines says, 'His subjects had great riches on account of the long peace which they had enjoyed, and owing to the excellence of the prince under whom they lived, one who clipped (*sallottit*) his subjects little; and it seems to me that these lands might better be termed lands of promise

than any other lordships which were upon the earth.' He was declared by the general council of Bâle, A. D. 1433, 'First Duke of Christendom.

Charles *le Téméraire*, or *the Rash*, last duke of Bourgogne of his race, had distinguished himself by valour, restlessness, and ferocity of character during his father's lifetime. As count of Charollois he had engaged in a league of the great nobles of France against Louis XI. in 1464. At the head of this league were Charollois, the duke of Berri, the king's brother and heir to the throne; the dukes of Bretagne, Alençon, and Bourbon; the bastard of Orleans, Dunois, who had acquired great reputation in the war against the English; and the counts of Foix and Armagnac. They were, it is likely, prompted by apprehensions of the advance of the kingly power, which was fast verging to an absolute monarchy, and threatened the extinction of the power of the great nobles; but they gave to their alliance the imposing title of the *Ligue du bien public*, 'League of the public weal.' In this contest Charollois signified his valour rather than his military skill in the indecisive battle of Montlher, a few miles S. of Paris. Louis, besieged in Paris, and alarmed by unfavourable intelligence from the provinces, hastened to agree to the demands of the confederates; and in the treaty of Conflans made large concessions, which he hoped to revoke at a future opportunity. During the negotiations he fearlessly trusted himself into the encampment of Charollois; and Charollois in return ventured unconsciously within the Boulevards of Paris. He returned however unharmed, to the great satisfaction of his followers, who had not forgotten the murder of Jean Sans Peur at the bridge of Montereau. He also manifested his character in the troubles in the Low Countries which disturbed the close of his father's life; he crushed the obstinate resistance of Dinant on the Maas, and gave up the population to massacre or slavery, and the town to the flames with the most ruthless ferocity.

In 1467 Charles *le Téméraire* succeeded to the duchy of Bourgogne; and the following year (1468) was marked by an event, which has, through Sir Walter Scott's interesting romance of 'Quentin Durward,' become familiar to the English reader, namely, the visit of Louis XI. to Peronne. By his artifices and negotiations Louis had separated the confederates who had formed the *Ligue du Bien Public*, and had recovered much of what he had been forced to concede to them: but his most formidable enemy remained unimpaired in strength and resources, and Louis determined upon attempting to cajole him by negotiation. With a show of complete confidence in Charles's honour, he visited him at Peronne, a town of Picardie, on the Somme, then in the duke's hands; while by his agents he was secretly prompting the people of Liège to rise against their bishop, who was under the protection of Charles. By an unlucky concurrence the rising of the Liégeois took place while Louis was yet in Charles's power; and when the intelligence of the rising, with many exaggerations, reached Peronne, Charles was moved to almost unbounded fury. It was reported that the bishop of Liège, and the duke's representative, the Sieur d'Imbercourt, had been murdered; and Sir Walter Scott has represented the murder of the bishop as taking place now, whereas it did not occur until the year 1482, after the death of the duke. Charles immediately put sentinels over Louis, and after taking a few days to moderate his rage, he compelled his prisoner to swear to a treaty, and to accompany him in an expedition to punish the revolted Liégeois. The town, though unprepared for resistance, was obstinately defended by the burghers, who in a sally had nearly captured both Charles and Louis; but after a few days it was entered by storm; the inhabitants, few of whom were killed in the assault, (which took place on the Sunday, while they placed an undue reliance on the sanctity of the day,) were driven away; and most of them met a lingering death from hunger, cold, or fatigue, or from the peasantry of the neighbouring countries. The town was burned with the exception of the religious edifices and the houses requisite for lodging the ecclesiastics who served them. Soon after this, Louis was permitted to return to Paris.

The following years of Charles's reign were occupied by the intrigues and counter-intrigues of himself and Louis, by a brief and fruitless attack upon France by Edward IV. of England, who had allied himself with Charles and with the Constable St. Pol, brother-in-law of Louis. But Louis managed to buy off the English; and St. Pol, who

sought to trim the balance between Bourgogne and France, by intriguing with both the princes, was detected in his double treachery, and by a compact between the duke and the king, was delivered up to the latter, who had him tried and decapitated without delay. During this interval, Charles managed to acquire the landgraviate of Alsace, a possession well calculated to unite his else disjointed possessions; and encouraged by the extent of his territories and his power, he sought to obtain of the Emperor Frederick III. the title of King. The emperor was once on his way to confer this dignity, when some suspicion caused him to retire; so nearly had this ambitious noble obtained the regal dignity.

But the close of Charles's career was beset with misfortunes. In the year 1474 he was involved in hostilities with the emperor of Germany, the Swiss, and his old inveterate enemy Louis XI. He had raised a mercenary force of English and Italian adventurers, and the success that had attended his enterprises for some time had increased his natural arrogance of temper. He was however compelled to yield to the pressure of his enemies; and was glad to purchase a reconciliation with the emperor. In 1475 he possessed himself of the duchy of Lorraine; and in 1476 he attacked the Swiss, who, though far inferior in numerical force, defeated him in a battle at Granson, in the Pays de Vaud, near the S.W. extremity of the L. of Neuchâtel. Enraged at this disgrace, he assembled a force of 60,000 men, overran the Pays de Vaud, and was again defeated by the Swiss, in a sanguinary battle at Morat, in the canton of Fribourg. Stung to madness by defeat, by the desertion of his allies and the treachery of his mercenaries, he again entered Lorraine, and laid siege to Nancy. The Duke of Lorraine, aided by the Swiss, attacked him here, defeated his small and dispirited army, and Charles himself perished in the route. This was in the winter of 1476-77.

The death of Charles *le Téméraire* extinguished the male line of the dukes of Bourgogne; and with it the grandeur and importance of the duchy. Charles had left an only daughter, Mary, who succeeded to all the dominions of her father out of France. Her right of succession to Bourgogne itself was disputed by Louis XI., who affirmed, that as the duchy had been granted to Philippe *le Hardi* as an appanage, it reverted to the crown in default of male heirs. The states of Bourgogne in an assembly at Dijon agreed to put themselves under the government of the king of France, stipulating for the observance of their rights and privileges. The rapacious Louis also wrested Artois and Franche Comté from the orphan duchess; and even while negotiating a marriage between her and his son, the Dauphin, afterwards Charles VIII., he occasioned by his treacherous intrigues a rising of the people of Ghent, which led to the massacre, after a formal trial, of two of Mary's ministers. Disgusted by the treachery of Louis, Mary accepted the proposals of marriage made to her by Maximilian, king of the Romans, son of the Emperor Frederick III. Thus the Flemish possessions of the dukes of Bourgogne passed to the house of Austria, to the Spanish branch of which they descended. A war between Maximilian and Louis ended in the treaty of Arras, A.D. 1482, by virtue of which Margaret, daughter of Maximilian and Mary of Bourgogne, was betrothed to the Dauphin, and sent to be educated at the court of France. Artois and Franche Comté, now held by Louis, were to form her dowry, but to be restored in case the marriage did not take effect. Flanders recognized the sovereignty of the French king, but preserved its privileges; and Bourgogne remained annexed to France. Mary of Bourgogne died shortly after this (in 1483), leaving, beside her daughter Margaret, already mentioned, one son, Philippe, who married Joanna of Castile, heiress of Ferdinand and Isabella, by whom he had a son Charles, afterwards the Emperor Charles V.

The title of Duke of Bourgogne has been since borne by different branches of the royal family of France.

Those possessions of the ducal house of Bourgogne which descended to Charles V., the Low Countries and Franche Comté, were erected in 1548 into a circle of the empire, under the title of the circle of Burgundy.

(Plancher, *Histoire de Bourgogne*; Garreau, *Description du Gouvernement de Bourgogne*; Barante, *Histoire des Ducs de Bourgogne*, &c.; Hallam's *Middle Ages*; *History of France*, published by the Society for the Diffusion

of Useful Knowledge; Bayle's *Dictionary*, enlarged by Bernard and others, Lond., 1735.)

BOURGOGNE, CANAL DE, one of the most important of the can. of France, and a portion of that system of inland navigation by which it is proposed to connect the Seine with the Rhine. This can. (which is either yet unfinished, or has been completed only lately) is intended to open a communication between the Yonne (a feeder of the Seine) and the Saône. It commences in the Yonne, near the place where the Armançon falls into that riv., and follows a course parallel to that of the Armançon to the neighbourhood of Montbard; after a circuit it returns again to the Armançon, and runs side by side with that riv. to its source. It is carried by a tunnel nearly 2 m. long, under the chain of hills which separates the basins of the Seine and Saône; and following nearly the course of the Ouche, joins the Saône near St. Jean de Losne. Its entire length is 120 to 130 m. By thus uniting the Seine and Saône it opens the navigation from the Channel to the Mediterranean; and by means of the Canal de Monsieur, which communicates from the Saône to the Rhine, it opens the navigation from the Channel and the Seine to the Rhine. It is comprehended in the departments of Yonne and Côte d'Or.

BOURGOING, JEAN FRANÇOIS, BARON DE, was descended from a noble house, not unknown in the history and literature of France. One member of the family, Edmond de Bourgoing, prior of a monastery of Jacobins at the time of the *Ligue*, eulogized the regicide Jacobin Jacques Clement, declaimed and fought against Henri IV., and was sentenced, by the parliament of Tours, to be torn to pieces by four horses. Noel, Jean, and two François de Bourgoing, have since successively published works, now forgotten, upon history, finance, jurisprudence, philology, and divinity. Jean François, the subject of the present article was born at Nevers, A.D. 1748. At the age of twenty he quitted the army for diplomacy, and was immediately employed as Secretary of Legation. In that capacity, in the year 1777, he accompanied M. de Montmorin, the French Ambassador to the court of Spain, to Madrid, where he resided nine years, for the last two as *Chargé d'Affaires*. During this period he diligently collected information relative to the condition of Spain, political, statistical and social, which, upon his return to France, he embodied in his *Nouveau Voyage en Espagne, ou Tableau de l'Etat actuel de cette Monarchie*, published in 1789, and then esteemed the best work extant upon Spain. In 1791 Bourgoing returning to Spain as minister plenipotentiary, remained there until 1793, when he collected additional materials for his book, of which a second edition, thus enlarged, appeared in 1797. Third and fourth editions, with successive additions of new information, bringing down the picture of Spain to later dates, appeared in 1803 and 1807, under the title of *Tableau de l'Espagne Moderne*. It is upon this work which has been translated into the English, German, and Spanish languages at least, that the Baron de Bourgoing's claims to notice rest. He lived retired, from the time of his quitting Spain until Bonaparte assumed the government of France, when he was again employed in several diplomatic missions, and died, A.D. 1811, as French envoy to Saxony. His other works are *Mémoires Historiques et Philosophiques sur Pie VI. et son Pontificat*; *Correspondance d'un jeune Militaire, ou Mémoires du Marquis de Lusignan et d'Hortense de S. Just*; some translations from the German, and some articles in the *Biographie Universelle*, (*Allgemeine Deutsche Real Encyclopädie*; *Biographie Universelle*; *Biographie Contemporaine*.)

BOURIGNON, ANTOINETTE, was a celebrated religious enthusiast, and founder of a sect which acquired so much importance that, under the name of the Bourignon Doctrine, it is to this day one of the heresies renounced by candidates for holy orders in the Church of Scotland. She was the daughter of a Lille merchant, and was born in the year 1616, so singularly ugly that a family consultation was held upon the propriety of destroying the infant as a monster. This fate she escaped, but remained an object of dislike to her mother, in consequence of which her childhood was passed in solitude and neglect, and the first books she got hold of chancing to be 'Lives of the early Christians, and mystical tracts, her ardent imagination acquired the visionary turn that marked her life. It has been asserted that her religious zeal displayed itself so early, that at five years of age she entreated to be removed to a more Chris-

than country than Lille, where the unevangelical lives of the townspeople shocked her.

As Antoinette was a considerable heiress her deformity did not prevent her being sought in marriage; and when she reached her twentieth year one of her suitors was accepted by her parents. But the enthusiast had made a vow of virginity, and on the very day appointed for celebrating her nuptials she fled in man's clothes. She now obtained admittance into a convent, where she first began to make proselytes, and gained over so many of the nuns that the confessor of the sisterhood procured her expulsion not only from the convent but from the town. Antoinette now wandered about France, the Netherlands, Holland and Denmark, every where making converts, and supporting herself by the labour of her hands until the year 1648, when she inherited her father's property. She was then appointed governess of an hospital at Lille, but soon afterwards was expelled the town by the police, on account of the disorders that her doctrines occasioned. She then resumed her wanderings. About this time she was again persecuted with suitors, two of whom were so violent, each severally threatening to kill her if she would not marry him, that she was obliged to apply to the police for protection, and two men were sent to guard her house. She died in 1680, and left her property to the Lille hospital of which she had been governess.

She taught that the true church was extinct, and God had sent her to restore it. She allowed no Liturgy, worship being properly internal. Her doctrines were highly mystical, and she required an impossible degree of perfection from her disciples. She is said to have been extraordinarily eloquent, and was at least equally diligent, for she wrote twenty-two bulky volumes, most of which were printed at a private press that she carried about with her for the purpose. After her death Poiret, a mystical Protestant divine, and a disciple of the Cartesian philosophy, wrote her life, and reduced her doctrines into a regular system. (*Allgemeine Deutsche Real Encyclopädie*; *Biog. Univ.*; Chalmers's *Biographical Dictionary*.)

BOURN, or BURN. [Kesteven, Lincolnshire.]

BOUSSAC, a town in France, in the dep. of Creuse, and capital of one of the arrond. into which that dep. is divided. It is upon the River Petite Creuse, about 174 m. nearly S. of Paris, 40° 21' N. lat., 2° 12' E. long.

'Boussac,' says M. Malte Brun, 'the least populous of all the chief towns (whether of arrond. or dep.) of France, stands on a rock almost inaccessible to carriages; surrounded by walls flanked with towers, commanded by an ancient castle crowned with battlements, from whence the eye looks down upon a pass formed by mountains of arid and wild aspect; this place is the most desolate abode that can be imagined.' The pop. of the town is omitted in the returns for 1832, given with the last edition of Malte Brun: by a previous census (we believe that of 1826) it was 757.

The arrond. of Boussac contained, in 1832, 36,738 inh.

BOUSSU. [Hainault.]

BOUSTROPHE'DON. [ALPHABET, p. 382.]

BOUTERWEK, FRIEDRICH, a German metaphysician, professor of moral philosophy at the University of Göttingen, is chiefly esteemed for his 'History of Modern Literature.' He was born in the year 1766, at an iron foundery near Goslar, and completed his studies at Göttingen. He was educated for the law, but was diverted from his legal pursuits by the charms of lighter literature. At an early age he published several poems and a novel, 'Graf Donamar,' which is said to give a good picture of German life; but at the age of 25, being struck with a sense of the insufficiency of such occupation as the business of life, he devoted himself to metaphysics as a disciple of the then reigning masters, Kant and Jacobi. He was in consequence appointed to the chair of moral philosophy at Göttingen in 1797. Both in his lectures and in his metaphysical writings, he has ably expounded the doctrines of the above-named philosophers; but has produced nothing brilliantly new or original. His literary reputation rests upon his 'Geschichte der Neuern Poesie und Beredsamkeit,' in 12 volumes 8vo., published in 1801. This work contains separate critical histories of the Belles Lettres of Italy, Spain, Portugal, France, England and Germany, from the revival of letters to the close of the 18th century, and is still reckoned one of the best books that Germany has produced in this kind. It is not however to be quite implicitly relied upon, especially in the earlier volumes; the author either improved as he proceeded, or laboured

with heartier good will upon English and German literature. Portions of Bouterwek's work have been translated into French and English. Professor Bouterwek died on the 8th of August, 1828. (*Allgemeine Deutsche Real Encyclopädie*; *Geschichte der Neuern Poesie und Beredsamkeit*.)

BOUVIGNES, a town and comm. in the district of Dinant, and prov. of Namur, is situated on the left bank of the Maas, 12 m. S. of Namur and about one mile N.N.W. from Dinant, of which Bouvignes is a kind of suburb, in 50° 17' N. lat., and 4° 53' E. long.

Bouvignes, which was formerly a well-peopled place, carrying on a considerable trade, is now a very inconsiderable town, having rather the aspect of a village, and contains only 161 houses and 779 inhabitants. The town has a church, two chapels, a town-hall, an hospital, a prison, and a commercial school, in which 68 children are instructed. The commune contains two iron founderies, a pottery, two refineries of salt, and three breweries.

The castle of Bouvignes was in existence in the seventh century. In the ninth century it was sacked and burnt by the Normans. In 1110 a fort was built by Godfrey, Count of Namur, on the side of the hill by which the town is commanded. In 1176 the town was surrounded by walls, and twelve years afterwards was besieged and taken by the Count of Hainault. At the beginning of the 14th century the inhabitants of Bouvignes and Dinant were stimulated by commercial jealousy to make war upon each other, and it was during the continuance of these hostilities that the fortress of Creve-cœur was built by the inhabitants of Bouvignes. Only the ruins of a part of this fort now remain: they are rendered memorable by the heroic death, in 1554, of three females when the town was taken by the French. These women, having seen their husbands killed during the siege, threw themselves from the rocks rather than fall into the hands of the enemy. On this occasion the bravery of the defenders of the town was ill requited by the conquerors; the inhabitants, who were not killed during the siege or in the assault, were hanged.

Bouvignes was ravaged by the plague in 1262, in 1308, in 1478, and in 1579. It was exposed to a very disastrous inundation of the River Maas in 1480. (*Dict. Géog. de la Prov. de Namur*, par Vandermaelen; *Recueil, &c.* par V. der M.; Gautier's *Voyageur*.)

BOUVINES, a vil. of France, in the neighbourhood of Lille, dep. of Nord, remarkable only for a great battle fought here in the year 1214, between the emperor Otho IV. and his allies, the counts of Flanders, Boulogne, and others, on the one hand, and Philippe Auguste, king of France, on the other. The forces were about equal, and by no means so numerous as the estimates of some historians would make them. The rival monarchs distinguished themselves by their valour; and after a hard contest the victory remained with Philippe. Otho fled, and the counts of Boulogne, Flanders, and others, were taken prisoners.

BOW. [ARCHERY.]

BOW, in music, a machine used for drawing out the sounds from—i. e. for playing on—stringed instruments of the violin kind. The bow consists of—1. the stick, which should be of hard elastic wood, Brazil wood being generally used for the purpose; 2. of from eighty to a hundred horse-hairs; and 3. of a nut regulated by a screw, by which more or less tension is given to the hairs. The violin bow was very short in Corelli's time, but gradually increased in length, till Viotti, whose *dictum* in whatever concerned his instrument was received as law, fixed it at twenty-eight inches. The violoncello bow is larger and stronger. That for the double-bass is short and strong, and the stick is bent, forming something like the segment of a circle, of which the hairs when stretched are the chord.

BOW ISLAND (HE-OW), the largest of the coral islands in the Dangerous Archipelago, was discovered by Bougainville in 1768, who gave it the name of La Harpe. It was visited in the following year by Cook, who gave it the present name. Its figure however bears little resemblance either to a harp or a bow. It lies N.W. and S.E., is very irregular in shape, and 30 miles in length, with an average breadth of five. The form is the same as that of other coral islands, confining within a low narrow band of coral; about a quarter of a mile wide, a spacious lagoon studded with knolls, and an average depth of about 120 feet between them. The windward (eastern) side is higher than the other, which, with the exception of a few clusters

of trees and heaps of sand, is little more than a reef, over which the sea washes into the lake; but there is no passage even for a boat, except in one spot which may be entered by a large ship. This opening lies at the north end of the island, and is only 115 feet broad from reef to reef, with a coral knoll in the centre. When, owing to the heavy surf breaking over the reef into the lake, the latter has attained a higher level than the ocean, the water rushes out through the opening, sometimes at the rate of four miles an hour, causing overfalls which would be very dangerous to boats.

Within the lagoon the anchorage is perfectly secure; the bottom is generally of a fine white sand. Water may be procured by digging through the sand into the coral rock, and at the depth of four feet it was found to flow into the wells as fast as casks could be filled. In this manner the Blossom obtained ten tuns a day, which proved tolerably good, though it does not keep so well as spring water; it was found to be impregnated with muriate of soda and magnesia. Wood may also be procured, chiefly of the pemphis acidula, of a dark-red colour, and very hard; there are also cocoa-nut, palm, and pandanus trees. The lagoon abounds in shell-fish, particularly of the pearl oyster kind. A brig belonging to the Australian Pearl Company, which had brought a number of divers from Chain Island for the purpose, procured sometimes 1700 a day, but they did not yield well, being mostly of the seed kind.

The island is inhabited by about a hundred persons, living in miserable huts: they are an indolent ill-looking race, with broad flat noses, sunk eyes, thick lips, the mouths turned down at the corners, wrinkled countenances, and long bushy hair matted with dirt and vermin. Their stature is above the middle size, but they are generally crooked; their limbs are long, muscles flaccid, and their only covering is the *maro* round the waist. Hideous however as the men were, the women presented a still more revolting appearance: they are obliged to labour hard for the men in collecting shell-fish on the reefs, and the pandanus nuts, which, with other fish caught by hook and line, and the cocoa-nuts, is their only diet. They have a few rudely-made canoes. The number of house-flies is quite incredible: the young children lying naked on mats become so covered with them that it is difficult to discover any part of their skin. There is a chief, called Areghe, among them, who apparently maintains his rank by his superior bodily powers. They appear to have been cannibals; but the bodies of enemies, of those who die violent deaths, and of murderers who have suffered, were the only subjects selected for these feasts. They still show a partiality for raw food, in which state they devour fish, or turtle which are sometimes found on the shore.

Every man has his own deity, of which the most common is a piece of wood with a tuft of hair attached to it; or the thigh bone of an enemy, which is considered more efficacious than the wood. This is suspended to a tree, and to it they address their prayers. Polygamy is usual; and they appear to believe in the transmigration of souls. The bodies of the dead are wrapped in mats and buried, with provisions and water placed near, as it is believed that the soul for a time frequents the spot. The manufactures are mats, maros, baskets, fishing-hooks of the mother-of-pearl, lines, &c. The entrance to the lake lies in 18° 4½' S. lat., 140° 67' W. long.

(Beechey's *Voyage to the Pacific and Behring's Straits.*)

BOWDICH, THOMAS EDWARD, was the son of a merchant of Bristol, where he was born in 1790. His father at first intended to educate him for the bar, but, much against his own wishes, it was eventually arranged that he should engage in trade. On being admitted, while still very young, a junior partner in his father's house, he married; but, after a struggle of some years, both with his own inclinations, and with want of success, he entered himself at Oxford, where he only remained for a very short time. By the interest of his uncle, Mr. J. Hope Smith, the governor-in-chief of the settlements belonging to the African Company, he obtained a writership in that service, and proceeded to Cape Coast Castle in 1814. About two years afterwards he returned for a short time to England, when he was appointed by the Company to conduct a mission to the King of the Ashantees; but on his arrival at Cape Coast Castle it was thought by his uncle and the council there that he was too young to go at the head of the mission, and Mr. James, the governor of the fort of Accra, was put in his place. [ASHANTEES.]

While the party was at Coomassie, the capital of Ashantee, Mr. Bowdich, with the concurrence of the other subordinate members of the mission, superseded Mr. James, and took the management of the negotiation into his own hands. His conduct was afterwards approved by the authorities at Cape Coast Castle; but its propriety has since been strongly questioned by Mr. Dupuis (in his *Journal of a Residence in Ashantee*, 4to, 1824). After returning from this embassy, Mr. Bowdich again visited England; and in 1819 he published at London, in a 4to volume, his account of the remarkable people among whom he had been, under the title of 'A Mission to Ashantee.' Soon after the publication of this work, which was read with great avidity, the author proceeded to Paris; and in this city he appears to have resided for some years, prosecuting his studies, principally in the mathematical and natural sciences, which he had neglected in his youth. He now also published a pamphlet in exposure of the system pursued by the African Company in the management of their possessions, which is understood to have induced the government to take these settlements into its own hands. This was followed by a translation, with notes, from the French, of a 'Treatise on Taxidermy,' to which he did not put his name. He afterwards published, in succession, the following works:—'A Translation of Travels, by Mollien, to the Sources of the Senegal and Gambia;' an Appendix to the above, under the title of 'British and French Expedition to Teembo, with Remarks on Civilization, &c.:' an 'Essay on the Geography of North Western Africa;' an 'Essay on the Superstitions, Customs, and Arts, common to the Antient Egyptians, Abyssinians, and Ashantees;' three works, illustrated with lithographic figures, on Manumalia, on Birds, and on Shells; a Memoir, entitled 'The Contradictions in Park's last Journal Explained;' and a 'Mathematical Investigation, with Original Formulæ, for ascertaining the Longitude of the Sea by Eclipses of the Moon.' These titles are from the Life of the Author in the Annual Biography and Obituary, where no dates are assigned to any of them. With the assistance of a friend, and the money which he had realized by his publications, Mr. Bowdich, in August, 1822, set out for Africa, in pursuance of a wish which he had constantly cherished of devoting himself to the exploration of that continent. He had not however reached the mouth of the Gambia, accompanied by his wife, when he was attacked by fever, under which, after several partial recoveries, he expired on the 10th of January, 1824. In the same year was published from his papers, (8vo., London,) 'An Account of the Discoveries of the Portuguese in Angola and Mozambique,' the materials of which he had principally collected at Lisbon on his last journey; and in 1825, his widow, since Mrs. Lee, published in 4to, 'Excursions in Madeira and Porto Santo, &c.' by the late T. E. Bowdich, Esq.; to which are added a Narrative of Mr. Bowdich's last Voyage to Africa; Remarks on the Cape de Verde Islands; and a Description of the English Settlements on the River Gambia; by Mrs. Bowdich. (Annual Biography and Obituary for 1825 (in this account several of the dates are palpably wrong); Literary Gazette for 1824, p. 187, where it is stated that Mr. Bowdich was born in June, 1793.)

BOWYER, WILLIAM, the son of a printer of considerable eminence, who published many of the most distinguished theological, antiquarian, and scholastic works which appeared during the reigns of William and Mary, Anne, and George the First; a period often, and not without propriety, denominated the Augustan Age of English literature; for of the numerous writers, few exhibit original genius; the rest merely imitating, with more or less accuracy and elegance, the authors of Antient Rome, as they, with similar servility, imitated the Greeks. Among the divines who employed the press of the elder Bowyer, whose name was also William, may be noticed Derham, Prideaux, Wake, King, Sherlock, Bull, Whitby, Hiekes, Stanhope, Clarke, and Hoadly. The respect which his character commanded is shown by the fact that, having lost, in an accidental fire, the whole of his property, above 15000*l.* were raised by a general subscription to reinstate him in his business. William, his son, was born in London, December 19, 1699, in Dogwell-court, White Friars. He was educated at Headley in Surrey, in a private academy conducted by a respectable scholar, Ambrose Bonwicke, B.D. of Oxford, a non-juring Jacobite clergyman, ejected, on account of his nonconformity, from the head-mastership of

Merchant Taylors' School. Bowyer was entered, in June, 1716, a sizar of St. John's College, Cambridge; where he formed an intimate friendship with several eminent individuals, whose services at a later period contributed to his reputation and prosperity, more particularly with Jeremiah Markland, and the learned numismatic scholar, the Rev. Wm. Clarke; with these two fellow-students a congenial mind, and similarity of studies, occasioned an intimacy which continued throughout the rest of their lives. Although he remained at college beyond the period required for graduating, he returned to share in his father's business without having taken his degree. At the close of the year 1721, during which he had been closely employed in the correction of proofs, he became a partner with his father, who in future superintended the mercantile and mechanical portion of the business, while the literary and critical department was assigned to himself. In his first year of office, as corrector of the press, he received from Maittaire a most flattering compliment, contained in the preface to his 'Miscellanea Græcorum Carmina, 4to.' His predilection for archæological and philological subjects was evinced in the peculiar attention which he bestowed upon the correction of every work of this kind. Of the costly and classical works which, throughout a period of 55 years, possessed the advantage of bearing the signature 'Typis Bowyer,' we can notice only a very few. For a complete chronological list of them, as well as for a great variety of information concerning the authors and the printer, we refer to the well-known voluminous work of his partner and successor, entitled 'Literary Anecdotes of the 18th Century, comprising Memoirs of William Bowyer, Printer, F.S.A., and many of his learned Friends, by John Nichols, F.S.A.,' in 9 vols. 8vo., of which the 7th forms an elaborate index, and 6 supplemental vols. complete the work. As the press of B. was corrected by himself with a critical ability possessed by no other printer of his time, it was chiefly preferred for works of learning. But typographical accuracy was far from being the sole object of B.: he exercised a searching criticism upon the subject matter and language of the most learned works which he printed; supplied numerous notes, suggested emendations, wrote prefaces, made indexes, and in various ways increased their value. As specimens the following will suffice:—'Seldeni Opera Omnia,' collected by Wilkins, 3 vols. fol., 1726. Of the learned dissertation 'De Synedriis et Præfecturis Juridicis Veterum Ebræorum,' which occupies all the 2nd vol., a very judicious epitome was made by B., while he rapidly examined the last proofs. It exhibits, in 28 pages of English, the substance of 1180 folio pages of rugged Latin, profusely garnished with Hebrew, Greek and Arabic. In a review of 'Reliquiæ Baxterianæ,' a work replete with curious grammatical erudition, containing Glossarium Antiquitatum Brit. temporibus Romanorum, Bowyer displayed an intimate acquaintance with the subject; the same with the 'Læges Wallicæ Ecclesiæ Hywel Dda, by Dr. Wotton, 1730; and Chishull's 'Antiquitates Asiaticæ,' fol. 1732. On this learned work he made 28 quarto pages of 'additions and corrections.' To the 6th edition of Lyttleton's Latin Dic., 1735, he made a large addition of words collected in the course of his reading. The 'Greek Lexicon' of Schrevelius received the same improvement in passing through his press in 1774. That of Hederic, the Hebrew Lexicon of Buxtorf, the Latin one by Faber, and Bailey's English Dic. he similarly enlarged and corrected. In publishing, in 1750, Bladen's English version of 'Cæsar's Commentaries,' he added numerous learned notes, in which alone consists all the worth of the book. He printed at the same time, on his own account, 'Küster de vero usu verb. med.,' to which he affixed some critical remarks and a preface in Latin. He supplied also an elaborate preface, with numerous notes and corrections to a translation, in 1759, of 'Montesquieu's Grandeur of the Romans.' On the 'Life of Cicero,' by Dr. Middleton, he wrote a masterly commentary, in which, without any assumption of superior learning, he rectifies many mistakes. As a supplement to the work of his friend, William Clarke, 'The Connexion of Roman, Saxon and English Coins,' 4to., he wrote 'Remarks on Greek and Roman Money,' which, with 'Notes on Kennett's Roman Antiquities,' and 'Remarks on Roman History,' exhibit, for that time, an accurate and extensive knowledge of classical archæology. The whole of these commentaries, with many more, including 'Papers on Stephens's Thesaurus,' and a learned disquisition on 'The Feast of the Saxon Yule,' are separately printed in a large,

and now extremely scarce vol. in 4to., published in 1788, by Mr. Nichols, entitled 'Miscellaneous Tracts by the late Wm. Bowyer.' There yet remain in MS. inserted in margins, and interleaved copies of his favourite works, notes in great numbers, especially in Leigh's 'Critica Sacra,' Du Gard's 'Lexicon Græci Test.,' and many of the Greek and Latin classics. Among the multitude of sumptuous folios, and illustrated works which he printed, the following, as specimens of typographical beauty, may be selected: 'Matthæi Parker Cant. Arch. de Antiq. Brit. Eccles.,' fol. 1729. Vertot's 'Knights of Malta,' 2 vols. fol. 1728.; Maittaire's 'Marmorum Arund. Inscript.,' fol. 1732; Churchill's 'Voyages and Travels,' 6 vols. fol. 1732; Pococke's 'Description of the East,' 3 vols. fol., 1743; the 'Coptic Pentateuch,' by Dr. Wilkins, 1731; 'Lysiæ Orationes,' by Dr. Taylor, 2 vols. 4to., 1739. B. published, in 1766, 'The Origin of Printing, consisting of,—1st., Dr. Middleton's Diss. on its origin in Eng.; 2nd., Meerman's account of its invention at Haarlem, with numerous notes and corrections.' Although the result of more recent bibliographical researches has entirely discredited the legend about Laurentius Coster at Haarlem, the learned illustrations which B. has given to his publication must always render it one of the most important on the subject. But the reputation of Bowyer has been most extended by his 'Critical Conjectures on the New Testament,' which in part were published in the 2nd vol. of his ed. of the Greek text, of which the title in full is 'Novum Testamentum Græcum, ad fidem Græcorum solum Codicum MSS., nunc primum expressum, ad stipulante Joanne Jacobo Wetsteinio juxta sectiones Jo. Alberti Bengelii divisum; et nova interpunctione sæpius illustratum: accessere in altero volumine Emendationes Conjecturales virorum doctorum undecunque collectæ. Cura, typis, et sumptibus Gulielmi Bowyer;' 2 vols. 12mo., 1763. 'This,' says Dr. Harwood, in the appendix of his own edition, 'is a valuable Greek Testament; Mr. Bowyer is an excellent Greek scholar, and it is to be feared will be the last learned printer in England.' In Le Long's Bibliotheca Sacra, ed. ab Masch, tom. i., p. 246, it is highly approved, and the author is said to be 'vir doctus, et Stephanorum tum in arte sua, tum in Græcarum litterarum scientiâ sæmulus.' The president and fellows of Harvard University, in Massachusetts, in returning thanks in 1768, for a presentation copy, say, 'The very accurate editions of many erudite authors, published under your inspection, assure us of the greatness of your merit as a learned editor. Your very curious edition of the Greek Testament with critical notes, and many happy conjectures, especially as to punctuation, an affair of the utmost importance in ascertaining the sense, we esteem as a rich treasure of learning, and of more intrinsic value than many large volumes of the commentators.' The alterations proposed by Wetstein are inserted in the text of Bowyer. In the 2nd vol. a catalogue is given of the readings of Wetstein which are at variance with the text of Mill, or, which is the same thing, that of the 3rd edition of R. Stephens; excepting the Apocalypse, in which the variations were found to be too many and too great (tot ac tantæ) to be included. The words proposed to be, without substitution of others, omitted, as Rom. iv. final ver., 1 John v. 7 and 8, are inclosed within parentheses. A critical account of this edition is given in the Bibliotheca Theologica of Ernestus, tom. vi. p. 867, and in Michaelis, Einleitung, vol. i. p. 664, et seq. (in the translation of Bishop Marsh, Introduction, vol. ii.) 'Many obscurities in the Greek text are owing,' says Michaelis, p. 516, 'to an improper position of points: in collecting the opinions of the learned on punctuation, Bowyer has acted very judiciously, and rendered his work indispensable to the commentator and the critic.' But after the assertion, p. 395, that 'a collection of critical conjectures may be of great use in establishing the text of the Greek Testament: and that such is the work published by Bowyer, a learned London printer; a work classical in its kind, to which the remarks of future critics will be annexed:' it is stated, with apparent inconsistency, in the following page, that 'of the several hundreds of critical conjectures which Bowyer has produced there is hardly one which, after an impartial examination, will be found to be probable.' An enlarged and improved edition of the 'Conjectures' was published in 1772. It was translated into German by the professor of Theology and Oriental Literature at Leipsig, Dr. Schulz. A 3rd edition appeared in 1782; and the 4th and best in 1812, in 4to. As it furnishes the greatest evidence of Bowyer's erudition and critical sagacity, we subjoin at length its title—'Critical Conjectures and Ob-

servations on the New Testament, collected from various authors, as well in regard to words as to pointing, with the reasons on which both are founded: by William Bowyer, Bp. Barrington, Mr. Markland, Prof. Schulz, Prof. Michaelis, Dr. Owen, Dr. Woide, Dr. Gosset, and Mr. Weston.' It contains a large and excellent engraving of Bowyer. In 1729 he was appointed, by the Speaker of the House of Commons, to the lucrative office of printer of the votes. The Society of Antiquaries, in 1736, appointed him their printer; and the subjects of their researches being those in which he most delighted, he constantly attended their meetings, and made many valuable communications. He was also, at the same time, appointed printer to the Society for the Encouragement of Learning, of which he was a zealous promoter, in conjunction with many of the first scholars of the age. On the death of his father, in 1737, he became sole proprietor of the Bowyer press. Through the patronage of Lord Macclesfield he was appointed printer in 1760 to the Royal Society; and the Earl of Marchmont, in 1767, procured his appointment to print the Rolls of the House of Lords and the Journals of the House of Commons. In the same year he moved from Whitefriars, where he had spent 67 years, to more capacious premises in Red Lion Passage, Fleet-street, where he displayed a bust of the Roman Orator, with the inscription, 'M. T. Cicero, à quo primordia preli,' in allusion to the early impression of the *Liber de Officiis*, by Fust, in 1465. He also assumed the professional title of *Architectus Verborum* (vide *Cic. de Clar. Orat. c. 31*); and continued, until he arrived on the verge of 80, to correct all the Greek works which he printed. His long career of incessant application to study and business was terminated by the publication, in 1777, of his edition of Bentley's Dissertation on the Epistle of Phalaris. He had always manifested a great veneration for 'the mighty scholiast,' and augmented his Dissertation with numerous remarks collected by himself from the works of Markland, Upton, Lowth, Owen, Clarke, Warburton, and Dr. Salter, Master of the Charter-House School, who is responsible for its whimsical system of spelling, as saught, retein, disdein, reproch, &c. In the same year, on the 18th of November, at the age of 78, Bowyer died, and was interred at Low Leighton, in Essex. In his will he left considerable sums to indigent printers. His epitaph, by the Rev. Edward Clarke, describes him truly as 'Typographorum post Stephanos et Comelinos longè doctissimus; linguarum Latinæ, Græcæ, et Hebræicæ peritissimus.' There were indeed, at this time, several celebrated printers, as Baskerville of Birmingham, Foulis of Glasgow, and Crapelet of Paris; but Bowyer, as to erudition and critical accuracy, was unrivalled by any of his profession in England or on the Continent, during more than half a century. Among the numerous individuals of literary eminence with whom he maintained a learned correspondence, or an intimate personal friendship, were Archbishop Secker, Bishops Lowth, Hurd, Warburton, Pearce, Sherlock, Clayton, Pococke, Atterbury; Drs. Wotton, Chandler, Whiston, Taylor, Prideaux, Jortin, Conyers Middleton; Pope and Thompson; Garrick, Lord Lyttleton; Dr. Mead, Gough, Chishull, Clarke, Ainsworth, De Missy, Markland, Maittaire and Palairt, who in his Latin letters salutes him as 'vir doctissime et carissime.' Although 'a true Jacobite son of the Church,' he manifested a most charitable disposition. In his remarks, for instance, on the Emperor Julian, of whose life by Bletterie he published, in 1746, a translation, with learned notes by himself, he says, 'It is one of the hardest things in nature to give to an enemy the praise he deserves—the idea of apostasy is supposed to be inconsistent with every virtue; and the man who has rejected the Christian religion is thought to have abandoned humanity.' He was greatly admired and respected by the author of the noted Arian 'Essay on Spirit,' Bishop Clayton, who gave him the copyright of the whole of his works. Bowyer was estimable not only for his learning, but for rigid probity and active unostentatious benevolence. In general moral rectitude and amiable simplicity of manners, few have exceeded 'the last of learned printers.' His bust in marble, with a portrait of his father, is in Stationers' Hall.

BOYAR, or BOYARD, the general name for a Russian noble. The original nobility of Russia were composed of persons descended from the leading warriors of the first Russian monarch, Rurik and his successors, who, like the Norman warriors under our own William I., received large fiefs in the country which their valour had enabled their chief to

win. The fiefs seem to have been held by the sole tenure of military service; they paid no imposts to the prince, but every boyard had in his own possession the same powers and right of customs and tribute which himself had on his domains. The fierce struggles between kings and nobles which we read of in other countries were not known in Russia. Various causes have been assigned for this; the veneration generally entertained for the blood of Rurik was doubtless one; to which we may add the circumstances which combined to prevent any great power from being concentrated in the hands of individual nobles. In the first place, the scarcity of cities and strong holds prevented any of the military leaders from perpetuating themselves in their commands; and when the empire was divided into a multitude of small principalities, under the general and indefinite superiority of one Grand Duke, secondary fortunes were subject to continual mutation in the struggles which were always taking place among the princes; and which resulted from the singular law of succession, by which the brother of a deceased prince, and not his son, succeeded to the vacant appanage. It was also an unfavourable circumstance resulting from this law, that the prince of the lateral branch was usually a stranger in the appanage to which he succeeded, and that he generally came to it with a train of nobles and followers who engrossed his favour and preference. In fact, the princes themselves had more analogy than the boyards to the turbulent nobles of France and England; and the boyards themselves resembled the knights, who in those countries regarded the barons as their immediate superiors.

The boyards of Russia then owed their final elevation to the extinction of the petty principalities, and to the establishment of the hereditary principle in the succession to the grand dukedom. It was thus that the Grand Duke Dmitry Donskoi was enabled to say to them, 'Under us reign you were not boyards, but really Russian princes.' In fact the defection of the nobles from their immediate superiors, in order to avail themselves of the more certain protection and larger favours which the Grand Dukes were enabled to offer after the alteration of the order of succession, sealed the ruin of the petty princes, whose contentions had before distracted the empire. From this time we find the boyards occupying trusts which only princes had previously been privileged to hold; and no principle, separate from the general usages of the country, remained to distinguish the Russian nobles from those of other European countries. The distinction, while it existed, operated in giving a very peculiar tone to the early history of the Russian monarchy, as may be traced in Segur's *Histoire de Russie*, or any other history of Russia.

BOYAVAL, a vil. in France, in the dep. of Pas de Calais, not far from the town of St. Pôl. It is remarkable for a well about 140 ft. deep, the water in which does not ordinarily rise to more than 70 ft., but occasionally rises so as to fill the well entirely, and even to flow over the mouth of it. The time of these extraordinary flows is not regular, nor have the circumstances by which they are influenced been ascertained, except that the water is said to rise when the N. wind blows. The vil. (which stands on a hill) has no running water, nor any spring but this. When the well overflows it is observed that a small spring is formed near a neighbouring wood at a greater elevation than the mouth of the well. It has been observed also that when the well overflows for some time, the neighbouring country becomes sterile, and the corn is scanty in quantity and small in the grain. In Feb. 1703, this well, with the springs which had formed around it, gave out such a quantity of water, that united, they would have sufficed to turn a mill. The water formed a flow of some extent all round the well; and the inundation impaired the soundness of the cellars and of the walls of the houses. In 1736 another considerable inundation happened, which filled the cellars of the neighbouring houses. (*Encyclopédie Méthodique*; Expilly.)

BOYCE, WILLIAM, doctor in music, who as an English composer is entitled to contend with Arne for the honour of ranking next to Purcell, was born in the city of London, in 1710. He commenced his musical education as a chorister of St. Paul's, under Charles King, Mus. Bacc., and completed it under Dr. Greene, then organist of the cathedral. Anxious however to become acquainted with the philosophical principles of his art, he attended the learned lectures of Dr. Pepusch, from whom he also acquired a knowledge of the works of the early Flemish

and Italian composers. In 1736 he succeeded Weldon as one of the composers to the Chapels-Royal, and in performing the duties of the office produced the two Services and many Anthems which reflect so much honour on the English school of church music. Some years after he set Edward Moore's *Solomon*, a serenata, to music, in which are the duet 'Together let us range the fields,' the air, 'Softly blow, O southern breeze,' 'Tell me, gentle shepherd,' and other highly esteemed compositions. In 1749 he was selected to set an ode for the installation of the Duke of Newcastle, as chancellor of the University of Cambridge, when the degree of doctor in music was, uncollected, conferred on him. The same year gave birth to *The Chaplet*, a drama written by Moses Mendez, the music of which, composed by Boyce, immediately became popular, and so continued many years afterwards.

On the death of Dr. Greene, in 1755, Dr. Boyce was appointed Master of his Majesty's band of Musicians, then a lucrative and honourable office. In that year he also produced his finest work, the grand anthem, 'Lord, thou hast been our refuge,' which he wrote for *The Feast of the Sons of the Clergy*, and at the annual meeting of that corporation in St. Paul's cathedral, it has ever since been performed. In 1758, on the death of Travers, he became organist to the Chapels-Royal, which office he held in conjunction with that of composer. In 1760 he published in score, in three large folio volumes, the *Cathedral Music of the English Masters of the last two hundred years*, a splendid and useful work, in which the disinterestedness of the editor is not less remarkable than his deep research and acute discrimination; for not desiring any pecuniary recompense for his labours, he fixed a price on the publication—the sale of which was necessarily limited—which only indemnified him for the expense he had incurred in preparing and bringing it out.

Dr. Boyce during many years suffered much from the gout, the attacks of which became more frequent and severe as he advanced in age, and terminated his life in 1779. He was interred in St. Paul's cathedral, and 'his obsequies were performed with every mark of affection and respect, many persons of distinction attending, together with almost every musician in London at all known for talent, or esteemed for character.' His wife and an only son survived him; the latter died many years ago, leaving no issue.

The published works of this excellent composer are, *Fifteen Anthems*, together with a *Te Deum* and *Subilate*, in score, &c., 1780; a grand anthem, *Lord, thou hast been our refuge*, for a full band. A second, *Blessed is he that considereth the poor and needy*, for the same, 1802; a *Te Deum*, *Subilate*, and six anthems, printed in Dr. Arnold's *Collection of Cathedral Music*; the *Serenata of Solomon*; the *Opera of The Chaplet*; and numerous detached pieces, which appeared in *Lyra Britannica*; *The British Orpheus*; *The Vocal Musical Mask*, &c.

BOYDELL, JOHN, was born, as asserted in the 'Gentleman's Magazine,' in Staffordshire; at Stanton in Shropshire, according to the 'Biog. Dict.' of Chalmers; but according to Mr. Nichols in his 'Literary Anecdotes' (vol. iii. p. 411), an acknowledged authority for such particulars, in Derbyshire, in the year 1719. In his youth he was designed for the profession of his father, that of a land surveyor, to which for some time he attended; but having, it is said, accidentally seen a volume of views of country seats by Baddeley, his taste was developed, and he resolved to become an engraver. He accordingly proceeded to London, where, though at the age of 21, he bound himself for seven years to Mr. Tomms for the purpose of learning the art. At the expiration of his apprenticeship he published by subscription, in 1746, a volume of his own engravings, consisting of 152 views in England and Wales; price 5 guineas. They are now interesting chiefly as an indication of the imperfect state of the art in England at that period as compared with the improvement effected afterwards by his own exertions. Indeed he never himself excelled as an artist, a fact which his judgment and candour induced him often to acknowledge. These humble specimens served however to commence a very long and continuous course of prosperity; for with the profits of this publication he entered into business for himself as a printseller; and by the adoption of a very liberal policy in employing and amply remunerating the best artists of the time, he gradually extended his speculations, and acquired a large income, and a great reputation as an enterprising and generous patron of genius. He

engaged Woollett to engrave the celebrated pictures of Niobe and Phaeton; paying for the former 100 guineas, and for the latter 120: they were sold by Boydell at 6*s.* each; but have since, at auctions, produced 10 and 11 guineas: in short, he contrived to employ every aspirant to distinction whose energies wanted encouragement. When Boydell began business there were no very eminent English engravers, and they were generally inferior to those of the Continent. Our foreign commerce in this department consisted wholly in importations, and the cabinets of collectors were principally furnished by the artists of France. But when, after many years of persevering exertions, Boydell succeeded in forming an English school of engraving, the circumstances were reversed; for the importation of prints was almost entirely discontinued, and a large exportation ensued. Holland, Flanders, and Germany were the principal markets in which the engravings of Boydell were in demand. The complete success of his patronage in the province of engraving, and his indignation at the opprobrium which foreigners cast upon his countrymen for the deficiency of their taste in other departments of the fine arts, led him to attempt a similar improvement in the art of painting. For the accomplishment of this design he secured the services of all the first artists in the kingdom; and selected for illustration the works of Shakspeare, as supplying the most appropriate subjects for eliciting and displaying the abilities of each individual. An English school of historical painting was thus established. West, Opie, Reynolds, Northcote, and others were all employed. Spacious premises were purchased in Pall Mall, where, in the famous Shakspeare Gallery, were exhibited for several years those paintings which, in the words of Boydell, may with confidence be said to surpass in their great originality, diversity and peculiar freedom of conception, whatever has issued from the Flemish, French, or Italian schools. The following passage, in an article on the fine arts, in the 'Edinburgh Rev.' (vol. xvi. p. 309), is strangely at variance with the general opinion:—'Every man conversant in art, and alive to national reputation, rejoiced at seeing the Shakspeare Gallery dispersed, and deprived of the means of collectively disgracing his country.' The beautiful plates which, under the liberal patronage of Boydell, were engraved from these numerous paintings, form a magnificent volume in royal elephant folio, of which the dimensions are three feet by two; the title, 'A Collection of Prints from Pictures painted for the purpose of Illustrating the Dramatical Works of Shakspeare, by the Artists of Great Britain, Boydell, 1803.' A most superb edition of Shakspeare's dramatical works was at the same time undertaken by Boydell, and printed at the press of Bulmer, 1792-1801, in 9 vols. folio. There is a florid description of this sumptuous specimen of typography in Dr. Dibdin's 'Bibliographical Decameron,' 4to. vol. ii. p. 383. In regarding the prodigious expense of the whole project, and the magnificence of the performance, it is impossible to dissent from the assertion in the preface of the volume of plates, that it appears to be 'unrivalled in any age or country,' and is such, it may be added, as by one individual was never before undertaken.

The services of Boydell were universally appreciated. He was eulogised even from the pulpit. In a sermon delivered before the corporation of London on the 8th of Jan., 1804, the preacher (the Rev. John Perring), in his zeal to exhibit his merits in making the fine arts subservient to the cause of religion, asserted, 'he has at great expense adorned with prints a magnificent Bible,' an unfortunate mistake, for the illustrated Bible was an undertaking by Macklin, with which Boydell had nothing to do.

Being now (in 1804) at the advanced age of eighty-five, and having, in consequence of the commercial obstacles occasioned by the wars of the French Revolution, become involved in unavoidable difficulties, he obtained an act of parliament enabling him to dispose of the paintings of his Shakspeare Gallery by a lottery. In the memorial of his situation he states that his enthusiasm for the promotion of the arts induced him to lay nothing by, but to employ continually the whole of his gains in further engagements with unemployed artists; that the sums he had laid out with his brethren in the advancement of this object amounted to 350,000*l.*, and that he had accumulated a stock of copper-plates which all the print-sellers in Europe would together be unable to purchase. He lived only until the last ticket of his lottery was sold. The affair was finally decided sub-

sequent to his death, which occurred on the 12th of Dec., 1804. He had been elected alderman in 1782, sheriff in 1785, and mayor in 1790. He held also the office of master of the Stationers' Company. As the most generous promoter of those arts which refine and elevate the moral sentiments of man, he was honoured with a public funeral.

Among the collections published by Boydell was that of 120 engravings from the Houghton Gallery, which was purchased by the Empress Catharine of Russia. In 1777 he published in fol. the 'Liber Veritatis,' containing copies of 200 of Claude Lorraine's first sketches, in the cabinet of the duke of Devonshire; in 1794, the 'History of the River Thames,' 2 vols. fol.; and in 1803, in 4to., 'An Alphanumeric Catalogue of Plates engraved by the first Artists, from the finest Pictures of the Italian, Flemish, German, French, and English Schools.'

BOYEAU is any trench executed by the besiegers of a fortress to serve as a covered communication, or line of approach, during the progress of the siege. It receives the denomination of a parallel, an oblique, or a zig-zag boyeau, according to the line of its direction with respect to the general front of the works attacked. [TRENCH.]

BOYER. [ARGENS, MARQUIS D']

BOYLE, RICHARD, was born at Canterbury, Oct. 3rd, 1566. His family was respectable, and under the name of Biuvile had been settled in Herefordshire for many generations: but it was first rendered illustrious by the subject of the present notice, who from having been employed in the service of the chief baron of the Exchequer as a clerk, rose to the highest honours of the state; and as if they were insufficient to mark the sense which was generally entertained of his abilities, it has been usual to style him 'the great Earl of Cork.'

From Benet College, Cambridge, Mr. Boyle passed to the Middle Temple, but having lost both his father and mother, his resources were probably not sufficient for his maintenance during the usual course of study, and he was thus led to offer his services to Sir R. Manwood, at that time chief baron of the Exchequer. The circumstances in which he was now placed afforded him little opportunity for the exercise of his talents, and in his twenty-second year he went to Dublin in quest of a situation more suitable to the activity of his disposition. On landing in Ireland he was not in possession of more than 27*l.* 3*s.* in money, and a diamond ring and bracelet of gold, the gift of his mother; and his wardrobe, as he states in the short but instructive memoirs which he left of his life, was but slenderly furnished. His confidence arose from his energy and a determination to do his utmost to render himself useful. His first employment was to draw up memorials and other documents for individuals connected with the government, by which means he acquired considerable insight into public affairs.

In 1595 he married one of the co-heiresses of a gentleman of Limerick, who in admiration of his talents overlooked the inadequacy of his fortune. His wife died in giving birth to her first child, and left him in possession of 500*l.* a-year arising from landed estates, and a sum in cash besides. He lived with strict economy without being parsimonious, and as land sold at a very cheap rate in Ireland, he increased his property by considerable purchases in Ulster. The envy of several influential persons was excited by his prosperity, and they severally addressed letters to Queen Elizabeth, stating that Mr. Boyle, who only came into the country a few years before, made so many purchases of landed property as to occasion suspicion of his being aided by some foreign prince; a circumstance which was the more evident, they alleged, owing to some of his newly-acquired possessions being on the coast, and possessed of advantages for facilitating an invasion, an event which at the time was generally anticipated. Mr. Boyle, who had been informed of these machinations, had resolved upon repairing to the English court in order to defend his interests and character, but the rebellion of Munster broke out before he could quit Ireland. His estate was ravaged by the rebels, and as he himself states, 'I could not say that I had one penny of certain revenue left me.'

He now returned with forlorn prospects to the Temple; but when the earl of Essex was sent to Ireland he was received in the suite of that nobleman. On again reaching the country his former enemies made another attempt to crush his reviving hopes, and were so far successful as to

occasion his being put under confinement. He earnestly sought an opportunity of meeting the charges brought against him, and on his case coming before the English Privy Council, he was fortunate to secure the presence of the queen, who listened with interest to his able and successful defence. Before he concluded he exhibited the principal instigator of the proceedings (Sir Henry Wallop, treasurer of Ireland) in the character of a public peculator, and clearly proved that he passed his accounts in an irregular and dishonest manner. When he had done speaking the queen said, 'By God's death all these are but inventions against this young man, and all his sufferings are for his being able to do us service, and those complaints urged to forestall him therein; but we find him a man fit to be employed by ourselves, and will employ him in our service. Wallop and his adherents shall know that it shall not be in the power of any of them to wrong him, neither shall Wallop be our treasurer any longer.' A new treasurer was immediately appointed, and Boyle was made clerk of the council of Munster; 'and this (he says) was the second rise that God gave to my fortunes.'

He returned to Ireland to discharge the duties of his office, and shortly afterwards, on the Spaniards and Tyroccs being defeated with great loss, was sent to announce the victory to the English court. He performed this duty with marvellous celerity. He says in his memoirs, 'I made a speedy expedition to the court, for I left my lord president at Shannon Castle, near Cork, on the Monday morning about two of the clock, and the next day, being Tuesday, I delivered my packet and supped with Sir Robert Cecil, being then principal secretary, at his house in the Strand, who after supper held me in discourse till two of the clock in the morning; and by seven that morning called upon me to attend him to the court, where he presented me to her Majesty in her bedchamber.' The queen again received him in a gracious manner.

His fortunes now took a more prosperous turn than before. He bought at a low price the Irish estates of Sir Walter Raleigh, which contained 12,000 acres, and by prudent and judicious management greatly increased their value. At a subsequent period, when Cromwell was shown the improvements which he had effected, he remarked that if there had been an earl of Cork in every province the Irish would not have become rebels. The earl of Cork's tenants were most probably of his own faith, and perhaps his own countrymen, as he zealously promoted the immigration of English Protestants. His endeavours to diffuse among them the means of prosperity and comfort were therefore unchecked by the outbursts of religious and political discontent, and that turbulence which was an unavoidable result of the position and circumstances of the Irish; and having suffered much during the rebellion of Munster, his policy towards them was generally severe.

In July, 1603, Mr. Boyle married a daughter of Sir Geoffrey Fenton, principal secretary of state; on which occasion his friend Sir George Carew, the lord deputy of Ireland, knighted him on his wedding-day. In 1606 he was sworn a privy councillor to King James for the province of Munster; in 1612 a privy councillor for the kingdom of Ireland; in 1616 he was created Lord Boyle, baron of Youghall; and in 1620 Viscount Dungarvan and earl of Cork. In 1629 he was constituted one of the lords justices of Ireland; in 1631 lord high treasurer, an office which was made hereditary in his family.

Charles I., out of regard to the earl of Cork's character and talents, and as an acknowledgment of his services, created the earl's second son then living, Lewis, a child of eight years old, Viscount Kynelmeaky. Lewis was killed in the battle of Liscarroll in 1642, and his widow was created countess of Guildford in her own right by Charles II. The earl of Cork was a witness against Lord Strafford, with whom he had not been on cordial terms in consequence partly of the jealousy with which Lord Strafford during his residence in Ireland as lord lieutenant had regarded the influence of the earl of Cork. Notwithstanding the eminent station which this able man attained he often looked back with just and gratified pride to his early origin. He selected the following as his family motto, and caused it to be engraved on his tomb: 'God's Providence is my inheritance.'

The earl of Cork died Sept. 15th, 1644, in the seventy-eighth year of his age. His wife, by whom he had fifteen children, died in 1630. (Budgell's *Memoirs of the House of the Boyles, 1732*; *Life of the Hon Robert Boyle, &c.*)

Birch; *Memoirs* written by the earl of Cork in 1632, called *True Remembrances*.)

BOYLE, ROGER, fifth son and eleventh child of the first earl of Cork, born April 26, 1621, was created Baron Broghill, almost while in his infancy, by Charles I. He married a sister of the earl of Suffolk, and landed with his wife in Ireland the day after the breaking out of the rebellion, which he displayed great activity in quelling.

The death of Charles I., and the state of his possessions in Ireland, which he almost gave up as lost, induced him to seek retirement in England, where he occupied himself with projects for the restoration of royalty. He had gone so far as to obtain a passport, and was on the point of leaving the kingdom for the purpose of having an interview with Charles II., when his proceedings, and the future course of his life, were turned in another direction by the dexterous management of Cromwell, who, with the members of the Committee of Public Safety, had become acquainted with Lord Broghill's intentions. Cromwell had been struck with the possibility of securing the services of Lord Broghill in the cause of the Commonwealth, and having the sanction of the members of the committee, he sent a message to his lordship informing him of his desire to wait upon him, and followed his own messenger so quickly, that he entered his lordship's apartments before he had time to deliberate upon the meaning of the communication. Cromwell informed Lord Broghill that the Committee of Safety were acquainted with his intended movements, which he detailed. Lord Broghill attempted to deny the facts, on which Cromwell produced copies of papers which his lordship had confidentially addressed to friends of the royalist cause. The frank and candid manner of Cromwell, the just compliments which he paid to Lord Broghill's merits, and the real service which he was doing him by protecting him from the consequences of his conduct, completely succeeded in gaining him to Cromwell's proposals. Cromwell, who was about to proceed with an army to Ireland, offered Lord Broghill the command of a general officer, with a condition that his services should be limited to the immediate object of the expedition. Lord Broghill, after some hesitation, accepted Cromwell's proposition. His services in Ireland proved that his abilities had not been overrated. On one or two occasions Lord Broghill's boldness and activity were of signal value, especially during the siege of Clonmel, when his vigilance prevented the rebels from forming in the rear of the army during the siege. While engaged upon this service he received an urgent message from Cromwell recalling him to Clonmel, the siege of which he feared he should be compelled to raise, as there was much disease in the army, and it had been twice repulsed by the Irish. At the end of three days Lord Broghill appeared at the head of his division before Clonmel, when Cromwell caused the whole army to salute him by the cry of 'A Broghill! a Broghill!' Cromwell himself embraced him, and shortly afterwards, though it was in the depth of winter, Clonmel was taken.

Under the Protectorate Lord Broghill was one of the privy council, and at the special request of Cromwell he went to preside in Scotland. Richard Cromwell selected Lord Broghill as one of the cabinet council, along with Dr. Williams and Colonel Philips, and more than once his lordship's political talents were most dexterously employed in sustaining the Protector's interests. But the impossibility of Richard Cromwell any longer retaining the protectorate becoming soon evident, Lord Broghill, conceiving that the country might otherwise fall into the hands of a cabal, used every exertion to bring about the Restoration. He repaired to Ireland, and by his influence secured the co-operation of some of the most important individuals in the army, and soon after sent Lord Shannon, his younger brother, with a letter encouraging Charles II. to land in Ireland.

After the Restoration Lord Broghill was created earl of Orrery, and took his seat in the cabinet council. He also acted as one of the lords justices for the government of Ireland, and was appointed lord president of the province of Munster.

In the leisure which succeeded the active part of his life, the earl of Orrery, at the king's request, wrote several plays. He wrote also some verses on the death of Cowley, and other poetical pieces; a thin folio, on the art of war; and 'Parthenissa,' a large romance in folio, part of which he wrote by desire of Henrietta Maria, daughter of Charles I. These productions have no great merit, and were chiefly written during severe attacks of the gout.

He opposed a petition presented to the king by the Irish Catholics, praying for the restoration of their estates. Mr. Morrice, his private chaplain, asserts in his memoirs of Lord Orrery, that he was offered a large sum of money, and landed property worth 7000*l.* a year, on condition of withdrawing his opposition to the prayer of the petitioners. In his lordship's address to the privy council the Irish were charged with having broken all the treaties into which they had entered; and with having made an offer of the kingdom of Ireland to the pope, to the king of Spain, and likewise to the king of France; and he is said to have produced authentic documents in proof of his assertions. The claims of the petitioners were rejected. The Act of Settlement, which was drawn up by the earl of Orrery, contains stipulations by which those Roman Catholics who had conducted themselves loyally were restored to their possessions. His biographer states that he conceived it highly barbarous to persecute men for any opinions which were not utterly inconsistent with the good of the state; he wished for nothing more than to see a union between the Church and the Dissenters. On the Bill of Exclusion being brought in, he declared himself averse to a change of the succession, but wished rather that, in case of the crown devolving upon a catholic prince, some restrictions should be provided of a nature equally efficacious.

In a local court, in which he presided in virtue of his office of Lord President of Munster, he is stated to have acted with great wisdom and equity.

The earl of Orrery died Oct. 16th, 1679, in his 59th year.

BOYLE, ROBERT, was the seventh son of Richard Boyle, earl of Cork, and his wife Catherine, only daughter of Sir Geoffry Fenton, secretary of state for Ireland. There were fifteen children of this marriage, and the subject of this memoir (the fourteenth) was born on the 25th of January, 1626, at Lismore in the province of Munster. His sister Catherine, by marriage Lady Ranelagh, afterwards mentioned, was considerably older, having been born on the 22nd of March, 1614.

The autobiography and correspondence of Robert Boyle have been almost entirely forgotten in the superior fame which he has attained in chemistry and medicine. If we consider the position in which he stands among our philosophers, it will not appear superfluous, having his own words to quote, if we give the account of his earlier years at some length. The narration in question (in which he calls himself Philaretus, and writes in the third person) is prefixed to Dr. Birch's edition of his works in 5 vols. fol., which we here cite once for all—'The Works of the Hon. Robert Boyle, in five volumes, to which is prefixed a Life of the Author,' London, printed for A. Millar, 1744. Of his birth and station he says, 'that it so suited his inclinations and designs, that, had he been permitted an election, his choice would scarce have altered God's assignment.' His father, having 'a perfect aversion for their fondness, who use to breed their children so nice and tenderly that a hot sun or a good shower of rain as much endangers them as if they were made of butter or of sugar,' committed him to a nurse away from home, under whose care he formed a vigorous constitution. He lost his mother at an early age, this being one 'great disaster;' the other was the acquisition of a habit of stuttering, which came upon him from mocking other children. He was taught early to speak both French and Latin, and his studiousness and veracity endeared him to his father, 'and indeed lying was a vice both so contrary to his nature, and so inconsistent with his principles, that as there was scarcely anything he more greedily desired than to know the truth, so was there scarcely anything he more perfectly detested than not to speak it—'which brings into my mind a foolish story I have heard him jeered with by his sister, my Lady Ranelagh, how she having given strict order to have a fruit-tree preserved for his sister-in-law, the Lady Dungarvon, he accidentally coming into the garden, and ignoring the prohibition, did eat half a score of them, for which being chidden by his sister Ranelagh (for he was yet a child), and being told by way of aggravation that he had eaten half a dozen plums, "Nay truly, sister," answers he simply to her, "I have eaten half a score." At eight years old he was sent to Eton with his elder brother, the provost being Sir Henry Wotton, 'a person that was not only a fine gentleman himself, but very well skilled in the art of making others so.' Here he was placed under the immediate care of Mr. Herison, one of the masters, and became immoderately fond of

study from 'the accidental perusal of Quintus Curtius, which first made him in love with other than pedantic books.' He always declared that he was more obliged to this author than was Alexander. Two years afterwards the Romance of Amadis de Gaule was put into his hands 'to divert his melancholy,' and by this and other such works his habit of persevering study was weakened. He was obliged afterwards systematically to conquer the ill effects of this mental regimen, and 'the most effectual way he found to be the extraction of the square and cube roots, and especially those more laborious operations of algebra which so entirely exact the whole man, that the smallest distraction or heedlessness constrains us to renew our trouble, and re-begin the operation.' His father had now come to England, and settled at Stalbridge in Dorsetshire; on which account Robert Boyle was soon removed from Eton to his father's house, and placed under the tuition of the rector of the parish. In the autumn of 1638 he was sent to travel with an elder brother, under the care of M. Marcombe, a Frenchman, of whom he says, with many other encomia, that 'if he were given to any vice himself, he was careful by sharply condemning it to render it uninfectious.' 'The worst quality he had was his choleric; and that being the only passion to which Philaretus was much observed to be inclined, his desire to shun clashing with his governor, and his accustomedness to bear the sudden sallies of his impetuous-humour, taught our youth so to subdue that passion in himself, that he was soon able to govern it habitually and with ease.' It had been intended that he should have served in a troop of horse which his eldest brother had raised, but the illness of another brother prevented this. He travelled through France, and settled with his governor at Geneva, for the prosecution of his studies. A thunder-storm which happened there in the night was the cause of those religious impressions which he retained throughout his life, and, it should be added, without giving into either the fanaticism or the intolerance of his contemporaries. He carried his theological studies to considerable depth. He cultivated both Hebrew and Greek, though a professed hater of verbal studies, that he might read the originals of the Scriptures. On this subject he remarks in his manuscripts (Works, vol. i. pp. 29, 30)—'When I have come into the Jewish schools and seen those children that were never bred up for more than tradesmen, bred up to speak (what hath been peculiarly called) God's tongue as soon as their mother's, I have blushed to think how many gentlemen, that boast themselves to be the true Israelites, are perfect strangers to the language of Canaan; which I would learn were it but to be able to pay God the respect usual from civil inferiors to princes, with whom they are wont to converse in their own languages. And I confess myself to be none of those lazy persons that seem to expect to obtain from God the knowledge of the wonders of his book upon as easy terms as Adam did a wife, by sleeping profoundly, and having her presented to him at his awaking.'

In September, 1641, he left Geneva, and travelled in Italy, where he employed himself in learning the language, and 'in the new paradoxes of the great star-gazer Galileo, whose ingenious books, perhaps because they could not be so otherwise, were confuted by a decree from Rome; his highness the pope, it seems, presuming, and that justly, that the infallibility of his chair extended equally to determine points in philosophy as in religion, and loath to have the stability of that earth questioned in which he had established his kingdom.' Having seen Florence, Rome, and Genoa, he came to Marseilles, and here his own narrative ends. At Marseilles he was detained for want of money, owing to the troubles in England; having, however, procured funds from his governor, he returned to London, where he found (in 1644) his father dead, and himself in possession of the manor of Stalbridge, with other property. At that place he resided till 1650, not taking any part in politics, and being in communication with men of influence in both parties, whereby his property received protection from both. The epistolary correspondence of Boyle is amusing, and furnishes one of the earliest specimens of the lighter style. Considering the formality of the age, and the then existing peculiarities of the English, the extracts we give from a letter to Lady Ranelagh will appear original; while the letter immediately following, written from Boyle when at Eton to his father (stated to be taken from the original in the *Biog. Brit.*) will show the manners of the time.—

'My most honoured Lord Father

'Heartily praying for the continuance of God's favor to your Lordship still in soul and body, I humbly prostrate myself unto your honorable feet, to crave your blessing and pardon for my remissness, in presenting my illiterate lines unto your honorable kind acceptance. Whereas I have been heretofore cloyed with our college exercise, I could not so often visit your Honour in writing; but now being by the ardent desire of our brother, and the license of Sir Harry Wotton, and our schoolmaster, come to London, where we make four days' residence, have found opportunity to offer unto your Honour that oblation due unto so good and so noble a father, that is most humble duty: desiring your Honour to pardon him for his brevity, who strives to live after your Lordship's will and commandments.

'London, decimo

'Truly and obediently,

4to Martii.

'ROBERT BOYLE.'

Superscribed, 'For my dear Lord Father, the Earl of Cork.'

The following is a part of his account of his first journey to Stalbridge, written to Lady Ranelagh, March 30, 1646:—

'As we went along, we met divers little parties, with whom we exchanged fears, and found that the malignant humours, which were then abroad, had frightened the country into a shaking ague, till we got to Farnham, which we found empty and unguarded. With divers contentions upon this subject, I went to supper, and thence to bed, not without some little fear of having our quarters beaten up by the cavaliers that night; when lo! to second my apprehensions, about the dead of my sleep, and that night, I heard a thundering at the door, as if they meant to fright it out of the hinges and us out of our wits. I presently leaped out of my bed, in my stockings and clothes (my usual night-posture when I travel), and while Roger was lighting a candle, got my Bilboa and other instruments from under my pillow; whereupon Roger opening the door, saw it beset with musketeers, who no sooner saw us, but said aloud that we were not the men they looked for; and being intreated to come into the chamber, refused it, and he that brought them thither excused their troubling us with as transcendent compliments as the brown bill could afford. I wondered at their courtesy till I knew that it was the town constable, that, making a search for some suspicious persons, and coming by my chamber, that wanted a lock, either had a mind to make us take notice of so considerable an officer, or no mind that we should sleep while our betters watched; and for his not coming in, some accents of fear that fell from him made me suspect I was obliged for that to myself; and I remember that just at the opening of the door, he, peeping in, espied me drawing a pistol out of one of my holsters, which I believe made him so niggardly of his company. The next day we dined at Winchester, and ever and anon, by the trembling passengers we met, were as nicely catechized concerning our ways, as if we were to be elected in the number of the new lay elders. From thence we reached Salisbury that night, though before we came thither, we were fain to pass in the dark through a wood, where we had warning given us that about an hundred woodmen (we have got wild English too now) lay leiger, where these night-birds used to exercise their charity, in easing weary travellers of such burthensome things as money and portmanteaus. But coming nearer, and knowing the state's messenger, as he called himself, they durst not meddle neither with us nor with my trunks, which they eyed though very lovingly; and had we not been there, would, I believe, have opened to search for malignant letters, such as use to be about the king's picture in a yellow boy. I am loaded with civil language and fair promises; but I have always observed that in the trooper's dictionary the pages are so close and thick written with promises, that there is no room left for such a word as performance.'

From this time to the end of his life he appears to have been engaged in study. His chemical experiments date from 1646. He was one of the first members of the *invisible college*, as he calls it, which has since become the Royal Society. The rest of his public life is little more than the history of his printed works, which are voluminous, and will presently be further specified. He must have written with singular rapidity, for an argumentative and elaborate letter, written as appears on the face of it, in the morning, previously to making his preparations for a journey in the afternoon, is of a length which would occupy five columns of this work.

After various journeys to his Irish estates, he settled at Oxford in 1654, where he remained till 1668. Here his life ('Works,' vol. i.) states him to have invented the air-pump, which is not correct, though he made considerable improvements in it. [AIR-PUMP.] On the accession of Charles II. in 1660, he was much pressed to enter the church, but refused, both as feeling the want of a sufficient vocation towards that profession, and as desirous to add to his writings in favour of Christianity all the force which could be derived from his fortune not being interested in its defence. When he left Oxford, he took up his abode with Lady Ranelagh, in London, and in 1663 was one of the first council of the newly incorporated Royal Society. In the year 1666, his name appears as attesting the miraculous cures (as they were called by many) of Valentine Greatraks, an Irishman, who, by a sort of animal magnetism, made his own hands the medium of giving many patients almost instantaneous relief. This gentleman, Mr. Greatraks, a man of respectable family, and an Irish magistrate, (whose printed letter to Robert Boyle, besides being accompanied by the testimonials of himself and others to facts, is, as far as such a thing can be, evidence of good faith by its style and documents,) one day believed himself enabled by the power of God to cure diseases by his touch, and whatever the cause might be, has left sufficient evidence at least of this fact, that after his touch inveterate diseases did shortly leave those who suffered from them. Mr. Greatraks published his letter to Mr. Boyle in 1666, and some remarks written in the fly leaf of a copy we have seen will make a good *resumé* of the state of the evidence. 'In looking over the cases stated in this pamphlet, attested as they are by the most learned and philosophical individuals of that period, it is impossible to deny the existence of the facts as attested, without rejecting *in toto* the evidence of every historical record. Credulity may have distorted and exaggerated the reality, as witnessed by such men even as Boyle, Cudworth, Wilkins, Patrick, &c.; but doubtless the facts are essentially true as reported, and as certainly to be accounted for on the principle of mental and physical sympathy, the imagination of the patient being wrought upon by the powerful emotions excited by expectation. Half a hundred works of the most philosophical and scientific physicians might be cited in confirmation of the astonishing effects of that agitating excitement of the nervous system produced by operating upon the imagination; which perfectly explains all the wonders of animal magnetism.' We may add that the phenomena certainly witnessed at the tomb of the Jansenist Abbé Paris were not better attested, and were less extraordinary in degree, than those in question; and that, as we shall see, of all the men of his time, Robert Boyle was peculiarly the one whose opinion it would have been desirable to have. The reputation of Mr. Greatraks extended through the three kingdoms, and Flamsteed, among others, (Baily's *Flamsteed*, p. 12.) was among the number of those who went to Ireland to be touched, and calls himself 'an eye-witness of several of his cures.' He also received benefit himself, but whether from the touch or from subsequent sea-sickness, he is not certain, but judges from both. At the same time, in illustration of what we shall presently have to say on the distinction between Boyle as an eye-witness and Boyle as a judge of evidence, we find him in 1669 not indisposed to receive, and that upon the hypothesis implied in the words, the 'true relation of the things which an unclean spirit did and said at Mascon, in Burgundy, &c.' That he should have been inclined to prosecute inquiries about the transmutation of metals, needs no excuse, considering the state of chemical knowledge in his day; and we find even Newton inclined to fear, from the result of some experiments of Boyle, (the results of which only had been stated,) and to speak in time, as became one who should afterwards be master of the mint, a word in favour of the currency. In a letter to Oldenburgh, dated 1676, Newton writes thus: 'But yet because the way, by which mercury may be so impregnated, has been thought fit to be concealed by others that have known it, and may therefore possibly be an inlet to *something more noble, not to be communicated without immense damage to the world, if there should be any verity in the Hermetic writers*; therefore I question not but that the great wisdom of the noble author will sway him to high silence, till he shall be resolved of what consequence the thing may be, either by his own experience, or the judgment of some other that thoroughly understands what he speaks about; that is, of a

true Hermetic philosopher, whose judgment (if there be any such) would be more to be regarded in this point, than that of all the world besides to the contrary, there being other things beside the *transmutation of metals* (if these great pretenders brag not) which none but they understand. Sir, because the author seems desirous of the sense of others in this point, I have been so free as to shoot my bolt; but pray keep this letter private to yourself. Your servant, ISAAC NEWTON.'

It appears that both Boyle and Newton were startled with the result of the experiments of the former; and the treatment which old believers in alchemy have experienced from the present age will render it no less than just to say, that faith in alchemy now, and the same in the middle of the seventeenth century, are two things so different in kind, that to laugh at both in one shows nothing but the ignorance of the laugher.

Boyle had been for years a director of the East India Company, and we find a letter of his, in 1676, pressing upon that body the duty of promoting Christianity in the East. He caused the Gospels and the Acts of the Apostles to be translated into Malay, at his own cost, by Dr. Thomas Hyde; and he promoted an Irish version. He also gave a large reward to the translator of Grotius *De Veritate, &c.* into Arabic, and would have been at the whole expense of a Turkish Testament, had not the East India Company relieved him of a part. In the year 1680 he was elected President of the Royal Society, a post which he declined, as appears by a letter to Hooke, ('Works,' i. p. 74.) from scruples of conscience about the religious tests and oaths required. In 1688 he advertised the public that some of his manuscripts had been lost or stolen, and others mutilated by accident; and in 1689, finding his health declining, he refused most visits, and set himself to repair the loss. In that year, being still in a sort of expectation that the alchemical project might succeed, he procured the repeal of the statute 5 Hen. IV. 'against the multiplying of gold or silver,' and what was still more useful, the same statute contains a provision that 'no mine of copper, &c. shall be adjudged a royal mine, although gold or silver may be extracted out of the same.' In 1691 his complaints began to assume a more serious character. Lady Ranelagh died on the 23rd of December, and he followed her on the 30th of the same month. He was buried at St. Martin's in the Fields, Jan. 7, 1692, and a funeral sermon was preached on the occasion by Dr. Burnet, who had long been his friend, and to the expenses of whose history of the Reformation he had largely contributed.

Boyle was never married. In a letter to his niece, Lady Barrimore, on a rumour of the kind, he says, 'You have certainly reason, madam, to suspend your belief of a marriage celebrated by no priest but Fame, and made unknown to the supposed bridegroom: I shall therefore only tell you that the little gentleman and I are still at the old defiance. You have carried away too many of the perfections of your sex, to leave enough in this country for the reducing so stubborn a heart as mine, whose conquest were a task of so much difficulty, and is so little worth it, that the latter property is always likely to deter any that hath bounty and merit enough to overcome the former.' He was tall, slender, and emaciated; excessively abstemious in food, and somewhat oppressed by low spirits: but at the same time of a copiousness of conversation and wit which made Cowley and Davenant rank him in that respect among the first men of his age. His benevolence both in action and sentiment distinguished him from others as much as his acquisitions and experiments: and that in an age when toleration was unknown. He constantly refused a peerage, though the personal friend of three successive kings. He was always a moderate adherent of the Church of England; nor is it recorded that he ever attended any other place of worship, except once when he went to hear Sir Henry Vane discourse at his own house, on which occasion he entered into a discussion with the preacher. Finally, he was a man of whom all spoke well. With such a character, it is not to be wondered at if his private virtues were made to reflect a lustre upon his scientific exploits which the latter could not have gained alone; the more especially when it is considered that his contemporaries, who viewed him as he was, and from their own position, had a right to style his genius as one which produced results of the first order, which could be but another way of saying that it was of the first order itself. So indeed it has been understood: and we are accustomed to talk of Bacon

and Newton and Boyle together. The merits of Boyle are indeed singular, and almost unprecedented; his discoveries are in several cases of the highest utility: but we do not think the inference that they were the result of a reasoning power, or a distinctive sagacity, of the highest kind, would be correct. Coming after Bacon, feeling all the beauty of his methods, disgusted with the spirit of system, and strong beyond his contemporaries in common sense, the same view of life which made him indifferent to the political and religious disputes of his time, and content himself with the knowledge and practice of the things which they all agreed in, also regulated his views of philosophy; so that he tossed Laud and Paracelsus on one side, Prynne and Descartes on the other, and began to investigate for himself, on the simple principle of examining closely and strictly relating what he saw. In this respect his writings remind us strongly of those of Roger Bacon: they are full of sensible views and experiments of his own, and of absurdities derived from the relation of others. He leans too much, for one of our day, to the attempt to discover the fundamental relations which touch close upon the primary qualities of matter, instead of endeavouring to connect and classify what he had actually observed. And what we maintain is, that his discoveries do not show him to have that talent for suggestion and power of perceiving points of comparison, which is the distinguishing attribute of the greatest discoverers. To take an instance: in his experiments 'showing how to make flame stable and ponderable,' he finds that various substances gain weight by being heated. He states it then as proved that 'either flame, or the analogous effluxions of the fire, will be, what chemists would call, corporified with metals or minerals exposed naked to its action.' But it never suggests itself to him, that the additional substance added to the metal or mineral may be air, or a part of air.

When a character has been overrated in any respect, the discovery of it is usually attended by what the present age calls a *reaction*: the pendulum of opinion swings to the side opposite to that on which it has been unduly brought out of its position of equilibrium. For instance, in a very instructive discourse prefixed to the *Supp. Encyc. Britann.*, Mr. Brande speaks thus: 'Boyle has left voluminous proofs of his attachment to scientific pursuits, but his experiments are too miscellaneous and desultory to have afforded either brilliant or useful results; his reasoning is seldom satisfactory; and a broad vein of prolixity traverses his philosophical works. He was too fond of mechanical philosophy to shine in chemistry, and gave too much time and attention to theological and metaphysical controversy to attain any excellence in either of the former studies. He who would do justice to Boyle's scientific character must find it rather upon the indirect benefits which he conferred, than upon any immediate aid which he lent to science. He exhibited a variety of experiments in public, which kindled the zeal of others more capable than himself. He was always open to conviction, and courted opposition and controversy upon the principle that truth is often elicited by the conflict of opinions.' From none of this do we dissent except as to degree. To say that Boyle did not attain any excellence in chemistry, or furnish 'any immediate aid' to science, is surely too much. Perhaps it will be a fair method to take a foreign history of physics (where national partiality is out of the question) and try the following point:—What are those discoveries of the Briton of the seventeenth century which would be thought worthy of record by a Frenchman of the nineteenth? In the *Hist. Phil. du Progrès de la Physique*, Paris, 1810, by M. Libes, we find a chapter devoted to the 'Progrès de la Physique entre les mains de Boyle,' and we are told that the air-pump in his hands became a new machine—that such means in the hands of a man of genius multiply science, and that it is impossible to follow Boyle through his labours without being astonished at the immensity of his resources for tearing out the secrets of nature. The discovery of the propagation of sound by the air (the more creditable to Boyle that Otto von Guericke had been led astray as to the cause), of the absorbing power of the atmosphere, of the elastic force and combusive power of steam, the approximation to the weight of the air, the discovery of the reciprocal attraction of the electrified and non-electrified body, are mentioned as additions to the science. Between the character implied in the two preceding quotations, we have no doubt the true one is to be found. But there is a peculiar advantage consequent upon such a

labourer as Boyle in the infancy of such a science as chemistry. Here are no observed facts of such common occurrence, and the phenomena of which are so distinctly understood, that any theory receives something like assent or dissent as soon as it is proposed. The science of mechanics must have originally stood to chemistry much in the same relation as the objects of botany to those of mineralogy: the first presenting themselves, the second to be sought for. The mine was to be found as well as worked; and every one who sunk a shaft diminished the labour of his successors by showing at least one place where it was not. In this point of view it is impossible to say to what degree of obligation chemistry is to limit its acknowledgments to Boyle. Searching every inlet which phenomena presented, trying the whole material world in detail, and with a disposition to prize an error prevented, as much as a truth discovered, it cannot be told how many were led to that which does exist, by the previous warning of Boyle as to that which does not. Perhaps had his genius been of a higher order he would have made fewer experiments and better deductions; but as it was, he was admirably fitted for the task he undertook, and no one can say that his works, the eldest progeny of the 'Novum Organum,' were any thing but a credit to the source from whence they sprang, or that their author is unworthy to occupy a high place in our Pantheon, though not precisely on the grounds taken in many biographies or popular treatises.

The characteristics of Boyle as a theological writer are much the same as those which appertain to him as a philosopher. He does not enter at all into disputed articles of faith, and preserves a quiet and argumentative tone throughout. In his discourse against customary swearing, written when he was very young, he shows a little of the vein which distinguishes his letters: but the very great prolixity which he falls into renders him almost unreadable. He was, as he informs us in his youth, a writer of verses, and one fancy-piece in prose, 'the Martyrdom of Theodora,' has been preserved, wherein his hero and heroine make set speeches to each other, of a kind somewhat like those in Cicero de Oratore, with a little dash of Amadis de Gaula, until the executioner relieves the reader. His 'Occasional Reflections' have fallen under the lash of the two greatest satirists in our language, Swift and Butler, in the 'Pious Meditation upon a Broomstick' of the former, and an 'Occasional Reflection on Dr. Charlton's feeling a dog's pulse at Gresham College,' published with the posthumous writings of the latter. The treatises 'on Seraphic Love,' 'Considerations on the Style of the Scriptures,' and 'on the great Veneration that Man's Intellect owes to God,' have a place in the *Index librorum prohibitorum* of the Roman Church. (Kippis, *Biog. Brit.*)

The 'Boylean Lectures' were instituted by him in his last will, and endowed with the proceeds of certain property, as a salary for a 'divine or preaching minister,' on condition of preaching eight sermons in the year for proving the Christian religion against notorious infidels, viz. atheists, theists, pagans, Jews, and Mahometans, not descending lower to any controversies that are among Christians themselves. The minister is also required to promote the propagation of Christianity, and answer the scruples of all who apply to him. The stipend was made perpetual by Archbishop Tennison. Dr. Bentley was appointed the first Boyle lecturer. We shall not give a detailed list of all the titles of Boyle's works, which would occupy much room to little purpose, as a complete set of the original editions is very rarely met with, and the two collected editions have their own indexes. During his lifetime, in 1677, a very imperfect and incorrect edition was published at Geneva. The first complete edition was published in 1744 by Dr. Birch, as already noticed. It is in five volumes folio, and contains the life which has furnished all succeeding writers with authorities, besides a very copious index. The collection of letters in the fifth volume is highly interesting. The second complete edition was published in 1772. But previously to either of these, in 1780, Dr. Shaw, the editor of Bacon, deserved well of the scientific world by publishing an edition of Boyle in three volumes quarto, 'abridged, methodized, and disposed under general heads.' The second edition was published in 1738. As far as may be, the various and scattered experiments are brought together, and a good index added, but we cannot find any references to the originals. There is a list of Boyle's works in Hutton's mathematical dictionary, and another in Moreau. These

is a copious life, taken mostly from Dr. Birch, in the *Biog. Brit.*, and the same with some additions in Dr. Kippis's unfinished reprint.

It will be useful to remember as to contemporary chronology, that Boyle was born in the year in which Bacon died, and Newton in that in which Galileo died; Boyle being fifteen years older than Newton.

BOYLE, CHARLES, second son of Roger, the second earl of Orrery in Ireland, was born at Chelsea, August, 1676. He was entered, in his fifteenth year, at Christ Church, Oxford, as a nobleman. The directors of his studies were Dr. Atterbury, afterwards Bishop of Rochester, and Dr. Friend, the eminent physician, or, as others say, his brother, the master of Westminster school. The elevated rank and accomplishments of their pupil appear to have given the highest satisfaction to the master of the college, Dr. Aldrich, for, in the dedication to him of his 'Manual of Logic,' since adopted as the Oxford University text-book, he declares him to be 'magnum ædis nostræ ornamentum.' It is requisite here to say a word or two in explanation of the circumstances which gave rise to the famous controversy ostensibly sustained by the Hon. Charles Boyle against the great Aristarchus of Cambridge, Dr. Bentley, but which in reality was an affair with which Boyle himself had almost nothing to do. In addition to the particulars in the article on Bentley, p. 250, concerning the origin of this fierce contention of wit and learning, it may be observed that Dr. Aldrich, in order to promote the reputation of his college, encouraged the students in the practice of editing, every year, some ancient classic author; and as Sir Wm. Temple, in his 'Essay on Ancient and Modern Learning,' had just then asserted (*Works*, vol. i. p. 166) that 'The oldest books we have are still in their kind the best: the two most ancient in prose are Æsop's Fables and 'The Epistles of Phalaris:' the latter exhibit every excellence of a statesman, soldier, wit and scholar; I think they have a greater force of wit and genius than any others I have ever seen either ancient or modern'—these two Greek relics of antiquity, which Temple imagined to be of the age of Cyrus and Pythagoras, were chosen as subjects for the stripling Christ-Church editors. Æsop was published by Aisop, and Phalaris by Boyle, who was then at the age of 19. The title of his edition is 'Phalaridis Agrigentinarum Tyranni Epistolæ ex MS. recensuit, versione, annotationibus et vita insuper authoris donavit Car. Boyle; ex Æde Christi, Oxon., 1695.' In the preface it is stated that the text was collated only partially with the MS. in the King's Library, because the librarian (Bentley) had the singular kindness to refuse the use of it for the requisite time; the words are 'pro singulari sua humanitate negavit.' This petulant passage is said to have been occasioned by Bentley's remarking, at the time of lending the MS., that it was a spurious work, the subsequent forgery of a sophist, and not worthy of a new edition. In the Dissertation on the Epistles of Phalaris, which Bentley annexed to the 2nd edition of Dr. Wotton's Reflections, in 1697, their spurious character, as well as that of the present Æsopian Fables, is clearly exhibited; the King's MS. is declared to have been 'lent in violation of rules, and not reclaimed for six days, though for collating it four hours would suffice.' To show all the silliness and impertinence of these epistles, says Bentley, 'would be endless; they are a fardle of common-place without life or spirit: the dead and empty cogitations of a dreaming pedant with his elbow on his desk.' That Boyle, in his editorial office, received the aid of his tutor, Dr. Friend, is acknowledged by himself; indeed to those who can justly appreciate the labour of revising the text of an ancient Greek author, the great improbability needs not be suggested, that a young fashionable nobleman in his teens should, unassisted, accomplish a task so dull and difficult. Of the real circumstances of the case Bentley appears to have been aware when, in his 'Dissertation,' he shrewdly designates Boyle as the young gentleman of great hopes whose name is set to the edition, and asserts that the editor no more than Phalaris wrote what is ascribed to him. This declaration of Bentley's critical judgment elicited the witty and malignant attack upon him, entitled 'An Examination of the Dissertation, &c., by the Honourable Charles Boyle, 1698,' a work which, in reality, was the joint production of the leading men of Christ Church, instigated by Dr. Aldrich, while Boyle himself was absent from the country. This is the meaning of Swift in his 'Battle of the Books,' when he represents Boyle as being 'clad in a suit of armour given him by all the gods; that is, Dr. Friend, Dr. King, Dr. Smallridge, Dr. Atterbury, &c. A letter of the last

in his 'Epistolary Correspondence, vol. ii. p. 1-22., upbraids Boyle with ungratefully requiting his services in planning, writing half, and correcting the whole of the 'Examination.' See also Warburton's 'Letters,' 8vo., p. 11, for a confirmation of the fact that all the wit and erudition displayed under the name of Charles Boyle, was the produce of his fellow collegians. After this, it is somewhat amusing to find Dr. Kippis, in his *Biog. Brit.*, asserting that 'Mr. Boyle wrote extremely well in defence of his performance;' and the polite Dr. Felton observing that 'if we own Dr. Bentley is the better critic, we must acknowledge that his antagonist is much the genteelst writer.' The truth is, the united efforts of the Oxford scholars resulted in total failure. 'In many parts of the Examination,' says Bishop Monk, 'the critics seem to have parted too soon with their grammars and lexicons.' It occasioned, however, at the time a very great excitement in the two rival Universities, for though it left unimpaired the main arguments of the 'Dissertation,' yet, abounding in ready wit and satirical vivacity, it procured for the young nobleman of Oxford a temporary triumph. Bentley put forth, in 1699, his 'Dissertation' enlarged and separately printed: it effected the most complete demolition of the Oxford wits, who threatened but never attempted an answer. For many interesting particulars of this memorable controversy, see Dr. Monk's 'Life of Bentley,' 4to., p. 45-107; D'Israeli's 'Quarrels of Authors;' Rymer's 'Essay on Curious and Critical Learning.' Boyle, in 1700, was elected a member of parliament for Huntington; and, in consequence of a quarrel with his opponent, Mr. Wortley, he fought a duel with him in a gravel-pit near Grosvenor Gate in Hyde Park, an affair which, from his extreme loss of blood, was nearly fatal to him. In 1703 he succeeded to the title of earl of Orrery. He entered the service of Queen Anne, received the command of a regiment, and was made a Knight's Companion of the order of the Thistle. In 1709, as major-general, he fought at the famous battle of the Wood, under the Duke of Marlborough and Prince Eugene, at Malplaquet, near Mons, in Belgium. On his return to England he was sworn a member of the privy council, and sent, at the time of the treaty of Utrecht, in 1713, as envoy extraordinary to the states of Brabant and Flanders. For his services on this occasion he was raised to the English peerage with the title of Lord Boyle, Baron of Marston, in Somerset. On the accession of George I. he was made a Lord of the Bedchamber, and became a confidential favourite at court. In September, 1722, he was abruptly committed to the Tower on a charge of high treason, as an accomplice in the sedition called Layer's Plot. After six months' imprisonment he was bailed by Dr. Mead and others, and was ultimately acquitted. He amused himself in the latter part of his life with philosophical subjects; and patronized George Graham, an ingenious watchmaker, who constructed the mechanical instrument representing the planetary revolutions, and in gratitude to his benefactor, gave it the name of an Orrery. 'The whole merit of inventing it belongs,' says Dr. Johnson, 'to Rowley, a mathematician of Litchfield.' (*Index*, vol. ii. Suppl. Swift's Works.) In the 2nd vol. of the works of Roger earl of Orrery, are several literary compositions of Charles Boyle; among other trifles, a comedy called 'As you find it.' He published also a volume of Occasional Poems and Songs, on which Sir Richard Blackmore has the following distich:—

'After his foolish rhymes, both friends and foes
Conclude they knew who did not write his prose.'

He died at the age of 56, on the 28th of August, 1731.

BOYLE, JOHN, only son of Charles, fourth earl of Orrery, was born Feb. 2, 1706. On the death of his father in 1731 he took his seat in the House of Lords, and was a constant opposer of the administration of Sir Robert Walpole. He resided in Ireland a good deal, and formed an acquaintance with Swift; and in 1752 published 'Remarks on the Life and Writings of Dr. Swift.' In 1739 he published in two volumes 8vo. an edition of the dramatic works of his great grandfather; in 1741 he wrote 'Imitations of two of the Odes of Horace;' in 1742 he edited his great grandfather's 'State Papers,' which were published in one vol. folio. In 1752 he published in two vols. 4to. 'Pliny's Letters, with Observations on each, and an Essay on the Life of Pliny.' In 1739 appeared his 'Life of Robert Cary, earl of Moamouth.' He wrote several essays for 'The World,' 'The Connoisseur,' and the 'Gentleman's Magazine.' He was fond of retirement, and much attached to literary pursuits. The earl of Orrery died at his seat at

Marston, Somersetshire, Nov. 16th, 1762, in his 66th year. In 1774 appeared a volume entitled 'Letters from Italy,' which he had written while residing in that country in 1754-5.

BOYLSTON, ZABDIEL, an American physician, was born in the state of Massachusetts, in 1684. He was the first to introduce inoculation into New England, where the practice became general before it was common in Great Britain. In 1721 the small-pox broke out at Boston in an alarming manner, when Dr. Cotton Mather pointed out to the profession an account of inoculation as practised in the east, which was contained in a volume of the 'Transactions' of the Royal Society. Notwithstanding the ridicule with which his medical brethren treated this mode of counteracting a virulent disease, Boylston had the courage to inoculate his own son. In the years 1721 and 1722, the practice of inoculation spread, and, with one or two exceptions, it was attended with the most successful results. But such were the obstinate prejudices of the profession and the public generally, that clamours were raised against Boylston, and his life was in danger in consequence of the excited state of popular feeling; even the 'select men' of Boston passed a by-law prohibitory of inoculation. It was alleged that the practice increased the probabilities of contagion, and also that the disease being a judgment from Heaven on men's sins, it was impious to adopt such means to avert its wrath. Boylston outlived these prejudices, and acquired a considerable fortune by the successful practice of his profession. During a visit which he paid to England, he met with great attention, and was elected a fellow of the Royal Society. He corresponded with this body on his return to America, and some of his papers are printed in the Society's 'Transactions.' He was the author of two works relating to the small-pox (one a pamphlet published at Boston), both of which are in the library of the British Museum. The other work was printed in London, during the visit which he paid to this country.

BOYNE, a river of Ireland; rises near Carberry, in the barony of Carberry and co. of Kildare, whence, flowing W. not far from Edenderry in the King's County, it receives the waters of that portion of the bog of Allen lying immediately N. of the line of the Grand Canal; then, turning to the N. E., which direction it keeps throughout the remainder of its course, it receives the Yellow and Milltown rivers out of the bogs extending from Croghan hill to Tyrrell's Pass in the co. of Westmeath. Soon after this it enters the co. of Meath at Clonard, crosses the Royal Canal, and receives the Deel, a large stream flowing parallel to the Yellow River from Mullingar in Westmeath. The Boyne having now left the marshy skirts of the bog of Allen flows through the rich plains of Meath, receiving the waters of many small rivers, till, passing Trim, where its banks are crowned with the lofty ruins of numerous abbeys and castles, it sweeps past the base of Tara hill in a more northerly direction to Navan, where it meets the Blackwater, descending by a S. E. course from the lake of Virginia on the confines of Cavan. The united rivers now become navigable at a distance of 25 English m. direct from the sea, and resuming a more E. course by Slane and Oldbridge proceed along the S. part of the co. of Louth to Drogheda, and thence to the Irish channel, which the Boyne enters after a winding course of about 48 Irish m. or 60 English from its source. The navigation of the Boyne from Drogheda to Navan was effected by a company in 1770. An extension of the line to Trim and Athboy was projected, but never carried into execution. The whole navigation of nearly 20 m. from Drogheda to Navan was for many years in the hands of the company (The Boyne Navigation Company); but the title of the company to levy tolls being disputed, it was decided that the lower 12½ m. from the Carrickdexter Lock to Drogheda was legally vested in the Irish Board of Works, which accordingly took possession in August, 1834. The Boyne divides the co. of Meath diagonally into two nearly equal parts. Its whole course through this co. affords rich landscape scenery, the descent of the river being in general gradual, and the sloping banks abounding in historical interest. The river has been called the 'Boyne of Science' from the number of monastic institutions on or not far from its banks, among which may be enumerated Clonard, Trim, Bective, Donaghmore, Slane, Mellifont, Monasterboycas, and the various religious foundations of Drogheda.

The Boyne however derives its chief interest from the important battle fought upon its banks on the 1st July, 1690, between the English army under William III. and

the Irish under James II. The Boyne between Slane and Drogheda, a distance of 6 m., is fordable at three points; one below the bridge of Slane, another at Rosnaree, about a mile farther down, and a third opposite the little village of Oldbridge and hill of Donore, 3 m. to the W. of Drogheda. Round the W. base of the hill of Donore the Boyne takes a sweep and forms two small islands in front of Oldbridge: the banks here rise gradually towards the hill and church of Donore on the S. side, and along the beautiful ravine, still called King William's Glen, towards the ruined abbey of Mellifont upon the N. King William having marched from Carrickfergus, where he had landed on the 14th of June, mustered his force of English, French, Dutch, and Danes at Dundalk on the 27th, and finding that the Irish had retired beyond the Boyne, moved forward on the 29th, and encamped his army, 36,000 strong upon the N. side of the river between Mellifont and Drogheda. William had with him the Duke Schomberg and his son Count Schomberg, Generals Ginkel, Douglas, and Kirk, and other distinguished persons. James, accompanied by the dukes of Berwick and Tyroconnell, the Generals Hamilton, Sarsfield, and Dorington, and the Count Lauson, was encamped along the opposite bank with 27,000 Irish and French prepared to dispute the passage of the fords at Oldbridge, while Lord Iveagh, occupying Drogheda on his behalf, held the main road to Dublin on his right. On the evening of the 30th, while William was yet undetermined what course to pursue, he rode down with his staff within range of the Irish lines, and some field-pieces being brought to bear upon his party, he was in imminent danger of being killed by a round shot which tore away part of his coat and lacerated his shoulder. On this the English artillery was brought up and a brisk cannonade was commenced across the river, but no farther step was taken by either army until the next day. On the morning of the 1st, it having been determined to force the passage of the river, General Douglas and Count Schomberg were dispatched with a body of 10,000 horse and foot to cross the fords below Slane. On the other side, a body of 5000 French foot, supported by Sir Neal O'Neill's dragoons, moved from the left of the Irish army to oppose them. The passage of the river was soon effected; Sir Neale O'Neill fell at the head of his regiment on the first charge, and after a sharp dispute upon the bank, General Douglas made good his position against the French infantry. The success of this movement, so far, being announced to William, he gave the word to his centre, composed of the Dutch guards, the Kinniskillen infantry, and two regiments of French Hugonots, supported by Hanmer's and Count Nassau's dragoons, to cross the river opposite Oldbridge, where the Irish were partly under cover of ditches and breastworks, and partly concealed by intervening heights. The Dutch entered the river first, above the little islands; the French and Kinniskilleners crossed by the upper island of the two, and the Danish cavalry between them. The Dutch, although warmly received, succeeded in dislodging their opponents; but the French were broken by a charge of horse led by Collocz Parker, and M. Callemot their commander was slain; an squadron also of the Danish horse was driven back across the river by Hamilton's dragoons, and Count Nassau's cavalry with difficulty withstood several trying attacks of the duke of Berwick's guards. While the conflict was here at the hottest, William, at the head of the cavalry of his left wing, crossed the river a little below, and came to the support of his centre. Just about the same time Duke Schomberg, who commanded the reserve, crossing opposite Oldbridge to the assistance of the broken Hugonots, was killed, and Mr. Walker, celebrated for his heroic defence of Londonderry, fell shortly after. The Kinniskillen regiment, which had fallen back, it is said, through mistake, was rallied, and animated by the presence of William, charged the Irish very bravely, who, being beaten out of the town of Oldbridge by the Dutch, began to fall back on Donore hill, where James is asserted to have stood during the engagement an idle spectator of their struggles in his cause below. Here however the Irish rallied, and repulsed a charge made by General Ginkel; but in returning it at the head of his regiment General Hamilton was taken prisoner and his men were driven back with considerable loss. At the same time General Douglas, higher up the river, had pushed the French foot from their position, and was pursuing them towards Duleek, a town upon the road to Dublin about 4 m. in the rear. Hither the whole Irish army shortly after began to direct their retreat, which was

covered by the duke of Berwick, while Sarsfield conducted James from the field under the protection of his own regiment of cavalry. The English, concentrating their forces on the rear of the enemy, pursued them to the river near Duleek, where the duke of Berwick, after crossing the stream in considerable confusion, rallied once more upon the opposite bank, and favoured by the approach of night, put a stop to the pursuit. The loss on both sides was comparatively trifling. The Irish camp, baggage, and artillery fell into the victor's hands, and Drogheda surrendered next day. James fled straight to Dublin, and thence through the counties of Wicklow and Wexford, posted to Waterford, where shipping had been prepared to carry him to France. His army, freed from his irresolute councils, retired upon Athlone, and thenceforth fought with vigour and determination. An obelisk of grand proportions was erected in commemoration of the battle of the Boyne in 1736. It immediately faces the ford at Oldbridge, marking the spot where William received his wound on the evening before the engagement. It is 150 ft. in height, by 20 at the base. Oldbridge, although only a ford in 1690, had been the site of a bridge at a very early date, for its name, which indicates as much, is found in the patent rolls so far back as the reign of Richard II. The Boyne is also rendered famous in more ancient history by the invasion of Turgesius the Dane, who sailed up it with a fleet of Norsemen to the plunder of Meath A.D. 538. It is a deep and wide river at Drogheda, navigable for vessels of 250 tons, and would be capable of receiving vessels of much greater burthen were the bar which now obstructs its entrance partially removed. The total descent of the river is 336 ft. (*Stat. Surv. of Meath; Reports on Irish Bogs; Storey's Impartial Narrative; Taffe's History of Ireland; Post Chaise Companion.*)

BOYSE, SAMUEL, a writer of considerable poetical talent, but remarkable chiefly for the singular contrast of his elevated imagination and rectitude of moral sentiment, as displayed in his writings, and his dissolute propensities. He was the son of Joseph Boyse, an eminent dissenting minister, and was born in Dublin, in 1708. Being destined for the pulpit, he was sent by his father to the University of Glasgow, where, after spending a few months in idleness, he married while yet in his teens; and, with his wife and her sister, who in dissipation and indolence were similar to himself, he returned to Dublin, and occasioned by his dissolute conduct the ruin and death of his father, who, as a pauper, was buried at the expense of his congregation. He then went to Edinburgh, and published in 1731 a volume of poems, with a flattering dedication to the Countess of Eglington, who, with Lord Stormont, (on the death of whose lady, Boyse had published a laudatory elegy,) patronised him, and kindly recommended him to Lord Mansfield and the duchess of Gordon, by whom, and also by Lords Stair and Tweedale, he was furnished with introductory letters to the Lord Chancellor, Sir Peter King, Pope, and other important personages in England, whither he removed; to escape from the importunity of his creditors in Scotland. But his indolence and aversion to refined society defeated the friendly intentions of his patrons; so that, resorting to a squalid garret in London, he relied upon the sale of his verses and the charitable donations of literary individuals, whose compassion he excited by the most servile and pathetic protestations of his miserable condition. In 1740 he published his principal work, a poem entitled 'Deity.' It is favourably noticed by Fielding (see a periodical called 'The Champion,' Feb. 12, 1740; and 'Tom Jones,' b. vii. c. 1.) and by Hervey (*Medit. vol. ii. p. 239, ed. 1767*). It has been reprinted in several collections of the minor poets, (in one by William Giles, 1776,) and by some has been thought to be sublime and beautiful. It is one of the numerous attempts at poetical sublimity in which the most ridiculous faults are tolerated solely on account of the subject. The following lines from the poet's invocation of his muse are a fair specimen of this poem, which abounds more in notes of admiration than intelligible and consecutive ideas—

'Thou present wert when first the Almighty rode,
While Chaos trembled at the voice of God!
Thou saw when o'er the immense his line he drew!
When Nothing from his word existence knew!

To the atheist the author exclaims—

'Go! all the sightless realms of space survey!

The devotional reflections, though incoherent, and made often apparently to furnish a rhyme; display an occasional

energy of poetical conception which even Pope declared he would not disown. But we can feel only disgust at the pious pretensions of a man who, often with a guinea obtained by employing his wife to write mendicant letters, could gratify his sensuality at a tavern while she and her child were suffering with cold and hunger; and who, in order to indulge in his habits of intoxication, even sanctioned, it is said, and received the wages of, her prostitution. Boyse was a very copious contributor of verses to the 'Gentleman's Magazine.' For these compositions he was paid per 100 lines: they have the signatures Y and Alomus; and, if collected, would form about six 8vo volumes. Among his separate publications are 'Albion's Triumph,' a poem on the battle of Dettingen; 'An historical Review of the Transactions in Europe during 1739-45;' 'Chaucer's Tales in modern English,' &c. He was not deficient in ability as a classical scholar, and a translator of German, Dutch, and French; but his inveterate habit of drinking hot beer in the lowest pothouses at length stupified his mind, and reduced him to the necessity of pledging even his clothes. In this predicament he sometimes, for several weeks, sat up in bed composing odes and elegies for the 'Gentleman's Magazine.' All the mourning he could afford on the death of his wife was a pennyworth of black ribbon, which he tied round the neck of his little dog. His wretchedness, like that of Savage, was commiserated by Dr. Johnson, who instituted for him, among his friends, a subscription of sixpences. His benefactors, wearied out with his applications, at length abandoned him, and, in May, 1749, he died in his garret in Shoe-lane, with his pen in his hand, as he sat in his blanket, translating the treatise of Fenelon on the existence of God. He left a second wife in extreme poverty, and was buried at the expense of the parish. (See an elaborate Biography in Cibber's *Lives of the Poets.*)

BOZZARIS, MARCOS, a native of Souli in the mountains of Epirus, born about the end of the 18th century, was yet a boy at the time of the war of extermination waged by Ali Pacha of Jannina against the Souliotes. [ALI PACHA.] At the close of that war in 1803 Bozzaris and his father were among the remnant of the Souliote population who succeeded in reaching Parga, whence they went over to the Ionian islands, then under the protection of Russia. In 1820, when the war broke out between the sultan and Ali, about 800 Souliotes, who were still in the Ionian islands, offered their services to the Ottoman admiral against their old enemy, and were accordingly landed on the coast of Epirus. Soon after however, having reason to complain of the Turks; and at the same time receiving favourable proposals with a bribe of money from Ali, they went over to the pacha, by whom they were replaced in possession of their native mountains. This was a great stroke of Ali's policy, which enabled him to carry on the contest against the sultan for two years longer. The Souliotes now fought for him with their accustomed bravery under the command of Bozzaris, and their ranks were swelled by other Epirotes to about 3000 fighting men. With this force Bozzaris gained several advantages over the Turkish army, which was acting in Epirus against Ali. In the spring of 1821 the sultan sent Khourshid Pacha with a fresh army, who laid siege to Jannina. Bozzaris and his Souliotes annoyed the Turks by bold diversions in their rear, while the Greek revolution breaking out at the same time added to the difficulties of the sultan. On the taking of Jannina and the death of Ali in Feb. 1822, the Souliotes continued the war on their own account, and being attacked by Khourshid in their mountains, they defeated him with great loss in May and June of that year. Khourshid at last quitted Epirus, leaving Omer Vroni in command there, while at the same time Prince Maurocordato landed at Mesolonghi with a body of regular troops in the Greek service, and being joined by Bozzaris advanced towards Arta. This movement led to the battle of Petta, July 16, 1822, which the Greeks and Philhellenes lost through the treachery of Gogos, an old Kleftis and captain of Armatoles. Bozzaris, after fighting bravely, was obliged to retire with Maurocordato to Mesolonghi. Soon after the Souliotes, who had remained in their mountains, signed a capitulation with the Turks, by which they gave up Souli and the fortress of Khiafa, and on receiving a sum of money, retired with their families to Cefalonia, in Sept. 1822. Bozzaris with a handful of Souliotes remained with Maurocordato, determined to defend Mesolonghi to the last. He kept the Turks at bay by various sorties, and also amused them by promises of surrender, until a Hydriote flotilla coming to relieve the

place, the Turks raised the siege and retired into Epirus, March, 1823. The pacha of Scodra advanced next with a numerous force of Albanians, determined upon taking Mesolonghi. Bozzaris feeling the importance of that town to the Greek cause, and knowing the weakness of the fortifications, which were unfit to resist a regular siege, determined to meet the enemy. He left Mesolonghi with a body of only 1200 men, 800 of whom were his own Souliotes, and having inspired them with his own self-devotedness, he arrived on the 20th of August, 1823, near Kerpenisi, where the van of the Albanians, consisting of about 4000 Mirdites under Jeladeen Bey, was encamped. Having held a council with his officers, it was determined to attack the enemy's camp the following night. The Souliotes marched silently to the attack and surprised the Albanians, of whom they made a great slaughter. Bozzaris while leading on his men received a shot in the loins, and soon after another in the face, when he fell and expired. The Souliotes then withdrew, carrying away Bozzaris' body, which was interred at Mesolonghi with every honour. The executive government of Greece being informed of the event issued a decree in which they styled Bozzaris the Leonidas of modern Greece. His brother, Constantine Bozzaris, succeeded him in the command of the Souliote battalion. The self-devotedness of Bozzaris was the means of protracting the defence of Mesolonghi for two years more. The Ottomans being dispirited by the loss they had sustained, the pacha of Scodra after some fruitless demonstrations against the town withdrew into Albania, and no fresh attempt was made till 1825, when Mesolonghi was besieged and at last taken by the Egyptians under Ibrahim Pacha [MESOLONGHI]. What renders the battle of Kerpenisi more remarkable is, that the Mirdites, whom Bozzaris fought, were Christians like the Souliotes, though in the Ottoman service. They were said to have lost more than 800 of their men in the night of the attack. (Gordon's *History of the Greek Revolution*; *Life of Ali Pacha*, &c.)

BRABANT, DUCHY OF, formerly one of the most important provs. of the Netherlands, was bounded on the N. by Holland and Guelderland, on the E. by Guelderland and Liège, on the S. by Hainault and Namur, and on the W. by Flanders and Zealand.

Under the successors of Charlemagne, the dukes of Brabant were possessed of considerable power and influence over the rulers of the other Netherland provinces. Joan, eldest daughter of John III., the last duke of Brabant, bequeathed the duchy to Anthony, second son of Philip the Bold, Duke of Burgundy; and by degrees, through intermarriages, inheritance and purchase, the various Netherland provs. which composed the 'Circle of Burgundy,' came under the dominion of the dukes of that name. At the death of Charles the Bold, the last of these dukes, whose daughter Mary was married to Maximilian, the son and successor of Frederick IV., Emperor of Germany, Brabant passed under the dominion of the house of Austria. In 1516 Charles V., Emperor of Germany, and grandson of Maximilian, became King of Spain, and his Netherlands dominions were united with the crown of Spain.

The religious persecution instituted in the reign of Philip II. against all who would not profess the Roman Catholic religion, caused the inh. of the seven N. provs. to rise in defence of their liberties; and in 1581 these provs. were formed into an independent union, under the title of 'The United Provinces,' Prince William of Orange being declared Stadtholder. The seven provs. thus allied stood antiently in the following order as regarded their rank:—Guelderland, Holland, Zealand, Utrecht, Friesland, Overysell, and Groningen. To these were afterwards added, by conquest and under treaties, Drenthe, and the 'Généralités-lands,' so called on account of their belonging to the States General of the United Provinces. In these Généralités-lands was included the existing prov. of N. Brabant.

The remaining Netherlands provs., including S. Brabant, continued united with the crown of Spain until 1706, when, after the battle of Ramillies, they acknowledged for their sovereign Charles VI., afterwards Emperor of Germany, and were thenceforward known as the Austrian Netherlands.

In the progress of these events the duchy of Brabant was not only divided in the manner described into separate provs., but it was also limited in extent by the erection of part of its territory into the prov. of Antwerp. In the course of the war which broke out in 1793, the whole were united to France. In 1806 the United Provinces were erected into a

separate kingdom under Louis Bonaparte, who resigned his crown in 1810, when the territory was re-annexed to France.

At the Congress of Vienna, the whole of the seventeen provs. of the United Netherlands, including both N. and S. Brabant, were erected into a kingdom under the present King of Holland; but at the revolution of 1830 S. Brabant joined the revolt of the provs. which had formerly constituted the Austrian Netherlands, and it has since formed part of the kingdom of Belgium.

The two divisions of Brabant thus forming separate provs. and now belonging to different kingdoms, it becomes necessary to describe them under distinct heads.

BRABANT, NORTH, a prov. of the kingdom of Holland, bounded on the N. by S. Holland and Guelderland, from both which it is divided by the Maas; on the E. by the Belgian prov. of Limburg, and the Rhenish provs. of Prussia; on the S. by the Belgian provs. of Limburg and Antwerp; and on the W. by the Dutch prov. of Zealand. North Brabant lies between 51° 12', and 51° 54' N. lat., and 4° 12' and 6° 0' E. long.

This prov., which once formed part of the 'Généralités-lands,' is generally level, but on the N. and W. there is some rising ground: it contains several marshes and extensive heaths. It is politically divided into three depts. (arronds.) and nineteen districts (cantons).

The principal rivs. of North Brabant are the Maas, which forms its N. and N.E. boundary from 3 m. W. of Wanssum to its N. W. extremity; the Dommel, which has its source at Peer, in Limburg, enters North Brabant near the vil. of Valkenswaard, and flows N. past Eindhoven to Bois-le-Duc, after which, under the name of the Diezen, it joins the Maas at Crevecoeur. At Bois-le-Duc the Dommel is joined by the Aa, which rises in the prov. of Antwerp, about 4 m. N.N.E. from Turnhout, and enters North Brabant at the commune of Hoogmeide. The Mark or Merk has its source also near Turnhout, and running from S. to N. enters North Brabant near to Meerle: it falls into Hollands-Diep opposite the isl. of Goeree, having passed through the town of Breda. This prov. is also washed on the W. by the channel which joins the E. and W. Scheldt, and which separates the isls. of Zealand from the continent; and on the N. by the arm of the sea called Hollands-Diep, and its continuation the Biesbosch.

The principal towns are Bois-le-Duc, Breda, Bergen-op-Zoom, Oosterhout, and Tilburg; the other towns of the prov. are Geertruydenburg, Willemstad, Flusden, Grava, Eindhoven, and Helmont.

Geertruydenburg, a small fortified town, is situated on the Biesbosch. This town was given up by treachery to the duke of Parma in 1569, and was taken by Prince Maurice in 1593. It contained on the 1st of January, 1830, 755 males and 800 females, together 1558 inh., a great part of whom are engaged in the fisheries. It has a good harbour, and is 7 m. N.N.E. from Breda.

Willemstad is situated on the Hollands-Diep, 12 m. S.W. from Dordrecht. Willemstad, which is fortified, was built in 1584, by William I., prince of Orange: it has a good harbour; and in 1830 contained 920 males and 947 females, together 1867 inh. It made a very gallant and successful defence in 1793, against the attack of the French under General Dumourier.

Flusden, a fortified town near the Maas, is 15 m. N.E. from Breda. A great part of this town was destroyed in 1680, through the setting on fire by lightning of the castle, which contained 70,000 pounds weight of gunpowder. Pop. in 1830, 824 males, 1010 females.

Grave or Graf, situated on the left bank of the Maas, is 16 m. N.E. from Bois-le-Duc. It is a fortified town, and is considered as the key of Guelderland, on the borders of which it stands. It was taken by the duke of Parma in 1586, and submitted to Prince Maurice in 1602. It made a stout resistance to the French army in 1794, and did not capitulate until a great part of the town had been destroyed. Pop. in 1830, 1458 males, 1375 females.

Eindhoven, situated on the riv. Dommel, was formerly the capital of the prov. It is now a place of considerable trade, and various manufactures are carried on; among them are cotton spinning, flax spinning and weaving, breeding and tanning. Its grain market is considerable. Pop. in 1830, 1490 males, and 1506 females.

Helmont, on the Aa, is about 17 m. S.E. from Bois-le-Duc. This little town, which has about 2500 inh., is famous for its manufacture of damask napkins; it contains other

manufactories of woollen, cotton, and linen goods. The college of Helmont enjoys some reputation.

The pop. of Dutch Brabant amounted in January, 1830, to 348,891.

	Males.	Females.	Total.
In towns . . .	35,399	35,550	70,949
In rural districts	137,791	140,151	277,942
	173,190	175,701	348,891

Of the above there were 41,840 Protestants
305,446 Roman Catholics
1,476 Jews
129 not known

348,891

The movement of the pop. given in official statements for two decennary periods ending with 1824, was as follows:—

BIRTHS		MARRIAGES		DEATHS.	
towns.	country.	towns.	country.	towns.	country.
1804 to 1813.	72,176	4,064	17,146	16,616	59,185
1815 to 1824.	89,428	4,210	21,210	54,958	75,771
	80,415	30,280	14,549	54,958	69,507

showing a progressive increase in the numbers of the people, accompanied by an improvement as regards the duration of life.

The area of the prov. being 1653 sq. m., gives a pop. of 211 to the sq. m., which is somewhat below the average density of the kingdom, a fact which is attributable to its larger proportion of waste land.

North Brabant, in common with all the Dutch provs., and according to antient usage, has its particular States Assembly, the members of which are elected by the nobles, the towns, and the royal municipalities. This assembly meets annually as a matter of course, and more frequently if convoked by the King of Holland. Its functions are the regulation of local affairs, and the imposition of provincial taxes.

BRABANT, SOUTH, the metropolitan prov. of the kingdom of Belgium, is bounded on the N. by the prov. of Antwerp; on the E. by Liege and Limburg; on the S. by Hainault and Namur; and on the W. by East Flanders. South Brabant lies between 50° 32' and 51° 3' N. lat., and between 3° 53' and 5° 10' E. long.

South Brabant is politically divided into three depts. (arronds.)—

Brussels, containing 2 towns and	118 communes.
Louvain, " 4 " "	110 "
Nivelles, " 2 " "	106 "
	8
	334

The principal towns are, Brussels, Hal, Louvain, Aerschot, Diest, Tirlemont, Nivelles, and Wavre.

Aerschot, or Aerschott, a small fortified town in the district of Louvain and prov. of S. Brabant, situated on the riv. Demer. This town was the capital of the barony of Aerschott in 1125; it was subsequently fortified by the Duke d'Arenberg, into whose possession it had passed. A part of the antient fortifications, called Aurelian's Tower, still exists in a state of ruin.

Aerschot, which in 1829 contained a pop. of 3615, has a municipal government, consisting of a burgomaster, 2 sheriffs (échevins), 9 councillors, a secretary, and a receiver. The town contains one commercial and two private schools, the former giving instruction to 35 and the latter to 230 children of both sexes. The principal branches of industry are those of brewing and distilling.

Aerschot is 4 m. W. from Montaign, 18 m. N.E. from Brussels, and 20 m. S.E. from Antwerp.

The area of the province amounts to 328,426 hectares (812,419 acres), of which 316,883 are cultivated or productive

1,356	barren
1,768	occupied with buildings
8,419	roads and canals

328,426

The forest of Salignies, part of the remains of the great forest of Ardennes, is contained within the prov., and occupies 11,983 hectares (29,641 acres). This forest is situated between Brussels and Nivelles, commencing about 2 m. to the S. of Brussels, and extending beyond the vil. of Waterloo, a distance of 8½ m.

The pop. of South Brabant amounted on the 1st of January, 1831, to 556,046 souls, on an area of about 1269 sq. miles.

	In towns.	In rural districts.	Total.
District of Brussels	104,142	180,568	284,710
" Louvain	44,119	106,075	150,194
" Nivelles	12,523	108,619	121,142

Total 160,784
Of the above 551,987 are Roman Catholics
3,046 Protestants
580 Jews
433 not classed
556,046

The number of births in 1833 was—

	Males.	Females.	Total.
In towns . . .	3,151	2,959	6,110
In country . . .	7,180	7,005	14,185
	10,331	9,964	20,295

The deaths in the same year were—

	Males.	Females.	Total.
In towns . . .	3,316	3,296	6,612
In country . . .	5,316	5,355	10,671
	8,632	8,651	17,283

The number of marriages in the year was 3952. The proportion which these numbers bore to the whole pop. was,

Births . . .	1 to 29 inhabitants
Deaths . . .	1 " 41 "
Marriages . . .	1 " 137 "

The average number of children born to every marriage is stated to be 4.68 throughout the prov., the average number for the whole of Belgium being 4.72. (For the state of education, number of electors and representatives, number of cattle, sheep, and horses, &c., see BELGIUM.)

BRABANT, Agriculture of. Dutch or N. Brabant is naturally a poor barren country, part of which consists of sandy heaths, part of low marshes, neither of which are well adapted to cultivation. Industry has, in some measure, overcome these natural disadvantages, and the traveller will often admire fine crops of corn and flax, and neat plantations of tobacco on spots, which, a short time ago, were arid sands and barren heaths. Specimens of the natural soil often appear immediately adjoining the cultivated spots, and show the industry and perseverance of the inhabitants. The sands of Dutch Brabant and of the N. part of the prov. of Antwerp are much less susceptible of cultivation than those of E. Flanders. They are higher above the natural waters, and are more impregnated with carbonates and oxides of iron; hence they are more apt to burn and require much lime, which is not found in the neighbourhood, to correct the natural qualities. In many places the soil resembles the most barren spots of Bagshot-heath in England. Where the rivers have deposited a rich alluvial loam the land is very fertile, but it is generally situated so low, and so subject to be flooded, that it requires a great expense to protect it by dykes, and it is mostly left in the state of meadows.

The N. part of Austrian Brabant, now called the Province of Antwerp, especially that part which lies N. of that city, is almost entirely of the same barren nature. It is only in the neighbourhood of Antwerp that there is any appearance of fertility, and this is to be ascribed solely to the abundance of manure which the town affords, and the demand for all kinds of vegetables for its market.

The S. part of this prov., towards Malines, improves as you advance, and gradually loses that very flat appearance which distinguishes the Netherlands. The surface is more undulating, and there are some rich loamy fields in the valleys, and woods on the eminences.

South Brabant, which begins a little to the S. of Malines, presents a much more varied aspect, and possesses a much greater extent of good soil. A line may be drawn from W. to E. through Aerschot and Diest, along which there are some very fertile loams producing fine crops without much labour; as also towards Louvain and Tirlemont. These loamy soils, which are neither very light nor very stiff, predominate in all the valleys throughout the province, varying in quality and depth, and covering many rising grounds which barely deserve the name of hills. The higher grounds are covered with a poorer and more sandy stratum of no great depth, as is evident from the fine trees which grow upon them, and show plainly that there is a good soil be-

low the surface. A range of these hills runs at a little distance to the S. of Brussels, and along their brow are the well-known woods, which cover 20,000 acres and skirt the field of Waterloo, forming a kind of barrier or part of a belt to the S. of the capital.

The best soils in South Brabant are towards Flanders and Hainault, which last may be considered as possessing the most fertile soils in the kingdom of Belgium. Judging from the rich appearance of the crops in the neighbourhood of Tournay and along part of the road from thence to Brussels, travellers have been led to overrate the natural fertility of Brabant, and to attribute to the goodness of the soil what is more properly due to industry and good husbandry. From attentive personal inspection we are inclined to believe, that the general fertility of the whole district between Malines and Tournay in one direction, and Louvain and Namur in another, which includes the richest part of Belgium, does not, on the whole, exceed the average fertility of the inland counties of England, and is decidedly inferior to the rich alluvial soils called the *carses* in Scotland. The dryness of the summer prevents so extensive a cultivation of turnips as in England; but this is counterbalanced by the advantage of distilleries, which are attached to most of the principal farms, and by means of which a great part of the produce is consumed on the spot by stalled cattle, who are fatted on the refuse wash, and make an abundance of manure. The liquid part of the manure is collected in large tanks or reservoirs, and used either immediately on the land, or to accelerate the fermentation of the drier portions, by pouring it over the dung-heaps and composts.

The general system of husbandry in Brabant is very different from that in Flanders, and approaches much nearer to the most improved systems in England and Scotland. In some respects it is superior, in others not so; and both countries might improve in practical agriculture by mutually adopting practices, as far as is consistent with the difference of situation and climate, in which one country is more advanced than the other. The climate of Brabant is less variable and drier than that in the same parallel in Great Britain. The winters are colder, the frost more intense, and the snow lies longer on the ground. They are not so subject to late frosts in spring. In consequence of this their harvest is earlier. They have in general fine dry weather after harvest, in which the land may be cleared of root-weeds; and in this they spare no pains.

The crops in Brabant are not so varied as in Flanders. The larger extent of the farms does not allow so minute cultivation, nor so frequent a use of the spade; but from the moment the crop is severed from the ground, before it is out of the field, ploughs, rollers and harrows are at work, and the hard ground is moved to the depth of only two or three inches by means of light sharp ploughs; it is repeatedly harrowed to encourage the germination of the seeds of annual weeds, and destroy those that have come up; the root-weeds are carefully pulled up and burnt, and thus the land is cleaned, and all the advantages of a summer fallow are obtained. In autumn, after some showers have softened the earth to a moderate depth, the land is ploughed again to a greater depth, and either prepared and manured for immediate sowing, or laid up in ridges to receive the beneficial influence of the winter's frost, and be ready for spring sowing. In case it should not be sufficiently clean, according to the notions of the farmer, a crop of potatoes on light soils, or of beans and vetches mixed, to be cut green, on the stiffer, afford the means of destroying weeds. Barley is mostly sown in autumn, and of the winter sort; but spring barley begins to be extensively cultivated, especially since the *chevalier* barley has been introduced from England, which is as heavy and better for malting than the winter barley in common use before. Rye, both for bread and for distilling, is always a principal crop, and bears a higher price, in proportion to wheat, than it does in England. Clover is seldom sown with a spring crop, because they think, and perhaps not without reason, that a genial spring brings the clover-plant so fast forward as to injure the crop sown with it. They prefer sowing clover amongst rye or wheat, which being arrived to a certain strength, is not so likely to be injured by the young clover; whilst it gives sufficient shelter and protection. Wheat is often sown after winter barley, especially if they can get some turnips on the barley stubble, between the reaping of the one and the sowing of the other. Turnips seem to sweeten the ground, and with moderate manuring the wheat is generally good. The

cultivation of beans all over Belgium is the most imperfect; they are usually sown broadcast, mixed with tares or pease. The land is certainly kept clean by so close a crop, but, except it be cut up green for fodder, the produce is not very great; neither beans nor pease have room and air to perfect their pods, and only a few on the surface come to perfection. One of the greatest improvements in Belgian agriculture would be the drilling or dibbling of beans, and hoeing them by horse or hand hoes to prepare the land for wheat; at present they scarcely seem to know the value of this crop when well managed.

There is no particular rotation generally adhered to. The fields are cropped according to the wants of the farmer and the state of the land. An abundance of manure allows of rapid returns of white straw crops. All the clover, with little exception, is used green in the stables as food for horses and cattle. Potatoes, if not used to distil a spirit from them, are also chiefly consumed on the farm by cattle and pigs. Little hay is made in comparison with the quantity of the stock kept in winter. The chief reliance is on roots when green food fails. As a consequence of a scarcity of dry fodder, the young and store cattle have little else but straw in winter, and sometimes get so low in condition as to suffer greatly in cold seasons, and be a long time in recovering flesh. This is a defect which the best agriculturists in Belgium acknowledge and endeavour to correct by their example, but prejudice and custom are every where opposed to, and retard rational improvement.

In rich deep soils hemp and flax are cultivated to a great extent, and also rape and cole for seed. These are always highly manured, and usually succeeded by wheat, which thrives well after them. Tobacco has been tried in a few places, and seems to flourish. Maize or Indian corn may be seen growing here and there, but not to any extent. In dry warm summers, like those of 1834 and 1835, this grain ripens well and is very productive, but in most years the spring is too late and cold for this plant, which cannot bear frost in its tender state. The variety which succeeds best is that called the *quarantain*. It is supposed in a warm climate to ripen in forty days. This dwarf variety was warmly recommended by the late William Cobbett, who gave it the name of Cobbett's corn. An attempt has been made under the auspices of the government to introduce the rearing of silk-worms into Belgium, and a considerable establishment has been formed near Ath in Hainault, which appears to succeed. It is probable however that the occasional failure of the white mulberry leaf will cause occasional losses, and that as long as silk can be obtained from Italy, the south of France, and India or China, the northern countries will never be able to rear silk-worms with any advantage.

The peasantry of South Brabant and Hainault, which is called the Walloon country, have a dialect of their own, and are a very different race from the Flemish or the Dutch. The men are tall and muscular; and many may be met with who recall to mind those bold mercenaries who formerly served in war any one who would pay them, and were known by the name of Brabançons or Walloons. The women of the country are large and inclined to corpulence as they advance in years, owing probably to an abundant use of beer. They are not remarkable for elegance of figure, and the total absence of stays, or any support to the body, makes an abundance of flesh more conspicuous. The female figures in the pictures of Rubens are a very accurate representation of the country women in Flanders and Brabant. This feature however diminishes as you travel southward, and towards Hainault and Liege some very neat figures of women may be seen.

The cattle in Brabant are of a large and coarse kind more calculated for strength of draught than for activity. The Belgians have not yet discovered, that a moderate sized animal may be more profitable than a larger; or that a small cow with slight bones, like the Alderney cow, the Suffolk or the Ayrshire, may give as much and richer milk on less food, than one of their heavy and coarse animals. The government has taken pains to introduce improved breeds, and money has been expended for that purpose; but the prejudices of the peasants are not easily overcome, and they seem not yet inclined to take advantage of the good intentions of their rulers. A few individuals have availed themselves of the opportunity to purchase cows and bulls of a finer breed imported from England, and will probably be the means of opening the eyes of others.

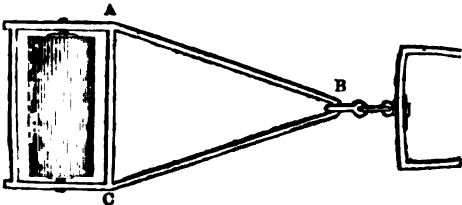
when it is observed that the finer breed is more profitable than the old.

The horses are large and strong, and on the whole fully equal to the general run of farm horses in England. They might be much improved by a cross with the more active Yorkshire or Lanarkshire horses. Most of the Belgian horses have a great defect in the form of their hips and in the croup, which falls suddenly towards the tail, which is called in England being *goose-rumped*.

The sheep are of a very inferior kind, long in the leg, with coarse wool and hanging ears. A few good Leicesters and improved Cotswold sheep have been introduced, and will probably improve the native breed. The fleece of a very fine ram imported from England being sorted and combed was exhibited in 1835 at Brussels at the annual exhibition of the industrious products of the country, and excited universal admiration for the length and fineness of the staple, and especially for the quantity of the wool. The whole fleece when shorn weighed twenty pounds, and of this nine pounds of fine long dressed wool was obtained.

The Belgian pigs are similar to the French, and nearer to the shape of greyhounds than of pigs, with long sharp snouts, and very long legs, the whole body being in the form of an arch of a circle, and very thin. A better breed has however been introduced, and, from the naturally prolific nature of the animal, will soon spread and supersede the old breed. There is a general spirit of agricultural improvement amongst landed proprietors in the country which the government is anxious to encourage.

The implements of husbandry used in Brabant are few and of the simplest kind. They use the excellent Flemish swing plough, which they call a foot plough, as it is also called in some parts of England, in contradistinction to a wheel plough. At the same time they also retain the old and heavy turn wrest plough, with a shifting coulter and mould board, as may be still seen in Kent and Sussex; yet they allow that the light Flemish plough does the work as well in the stiffest soils, and requires less force. It is surprising that two instruments so very opposed to each other in principle should be used on the same farm and in the same kind of soil, but the turn wrest plough is the indigenous instrument, and requires less skill in the ploughman: the Flemish plough is of later introduction, and the prejudices against anything new are not yet totally overcome. The plough is universally drawn by horses two abreast, driven in reins. Very few ox teams are seen. The land, in general, is not so neatly tilled as in Flanders, Scotland, or the best agricultural counties in England. There is not the same attention to the straightness and equality of the furrows in ploughing. The harrows are triangular, with wooden tines set at an angle of 45°, which may scratch the surface but cannot penetrate to any depth. A heavy iron drag to tear up the clods, and bring deeply-lying roots to the surface is much wanted, but is not in use any where, as far as we could observe in a tour through this province. A stone roller is used, set in a triangular frame, which drags on the ground, and serves to break the clods, and is a simple useful instrument, of which we annex a figure. The triangle A B C



drags on the ground before the roller, and the horse draws by the hook B. A winnowing machine with a fly and sieves is the only additional instrument in general use.

BRACCIA'NO, LAGO DI, a lake in the Roman state, the ancient Sabatinus, about 17 m. N.W. of Rome. It is of a circular form, about 18 m. in circuit, and lies at the foot of the ridge called Mount Cimino. It is almost entirely surrounded by hills, except to the S., where it borders on the wide unwholesome plain which slopes down to the sea. To the S.E. the lake has an outlet in the riv. Arrone, which flows into the sea at Maccarese. On its S.W. bank the castle of Bracciano rises with its old embattled walls and towers, on a rock projecting into the lake, with the vil. built at the foot of the castle, and containing about 1500 inh., with several iron-works and a paper manufactory. Brac-

ciano was, in the middle ages, an important fief of the Orsini family, who sold it afterwards to the Odescalchi, of whom the estate, with the ducal title attached to it, was purchased a few years since by the banker Torlonia for the sum of 2,200,000 francs. The banks of the lake of Bracciano are well cultivated, and planted with vines and other fruit trees: there are several little towns in its neighbourhood, such as Anguillara, Oriolo, Manziana, &c. The lake is not very deep, and it abounds with fish and fine eels. (Tournon, *Etudes Statistiques sur Rome*.)

BRACCIOLI'NI, PO'GGIO, son of Guccio Bracciolini, a notary, was born in 1380, at Terranuova, in the Florentine territory. He studied Latin at Florence, under Giovanni da Ravenna, a disciple of Petrarch; and afterwards Greek under Chrysoloras, a learned Byzantine emigrant. About 1402 Poggio went to Rome, where Boniface IX. employed him in the pontifical chancellery, as apostolic secretary or writer of the papal letters. Boniface having died in October, 1404, his successor Innocent VII., continued Poggio in his office, which he held for about half a century under eight successive Popes. Poggio availed himself of the favour of Innocent to obtain an employment in the apostolic chancellery for his friend and school-fellow Leonardo Bruni, of Arezzo. The friendship between these two distinguished scholars continued till death. Innocent having died in 1406, was succeeded by Gregory XII., who was soon after deposed by the Council of Pisa, and replaced by Alexander V. This was the period of the great Western schism. [BENEDICT, ANTIPOPE.] In the midst of these distractions Poggio withdrew to Florence, where he pursued his literary studies, and found a patron in Niccolò Nicoli, a wealthy Florentine, noted for his love of learning and his encouragement of the learned. When John XXIII. was elected Pope, Poggio returned to his duties of pontifical secretary, and as such he accompanied the Pope to the Council of Constance in 1414. At Constance he applied himself to the study of Hebrew and in his excursions into the adjoining countries he visited the Abbey of St. Gall, and other monasteries, where he had the good fortune to discover the MSS. of several classical works, which were considered as lost, or of which only imperfect copies existed. He complains, as Boccaccio had done before him, of the monks taking no care of the literary treasures which they possessed, and allowing the valuable MSS. to rot 'in cellars and dungeons unfit even for condemned criminals.' The monastic orders had long since greatly degenerated from their industrious and praiseworthy predecessors of the earlier centuries. Poggio found, among other MSS., copies of Quintilian's Institutions, of Vegetius, Silius Italicus, Ammianus Marcellinus, Columella, Asconius Pedianus's Commentaries upon some of Cicero's Orations, the Argonautics of Valerius Flaccus, several Comedies of Plautus, &c. Continuing his researches after his return to Italy, either by himself or through his friends, he found at Monte Casino a copy of Frontinus de Aquæductibus, he procured from Cologne the 15th book of Petronius Arbiter, and from a monastery at Langres several of Cicero's Orations, which had been considered as lost. Poggio either purchased the MSS., or transcribed them, or pointed them out to persons wealthier than himself. He repeatedly complains, in his works, of the want of encouragement from the great, both clerical and lay. His friends, Bartolommeo da Montepulciano and Cinzio, of Rome, assisted him by their own exertions, and Nicoli by his liberality. It is worth observing, as a corrective to the frequent querulousness of literary men, that at no epoch were scholars in greater estimation than in the 15th century in Italy, as is sufficiently proved by the honours and important offices conferred by the princes of that country on Poggio, Leonardo Bruni, Guarino of Verona, Filelfo, Valla, Beccatelli of Palermo, commonly called 'il Panormita,' George of Trebisond, Pontano, Biondo, and others, simply on account of their literary merit.

While Poggio was staying at Constance, he witnessed the trial and execution, by the sentence of that council, of Jerome of Prague, on the charge of heresy. He gives a most vivid account of that deplorable transaction, in a letter to his friend Leonardo Bruni, which has been often quoted by subsequent historians. Poggio was evidently moved by the constancy and the eloquence of the defence of the Bohemian reformer; and his own knowledge of the corruptions of the Roman church at that time made him, if not openly advocate Jerome's cause, at least commiserate his fate in terms so strong, that his more prudent friend

Leonardo wrote to warn him against giving way to his feelings. Poggio was still, nominally at least, papal secretary at the time. After Martin V. was solemnly acknowledged as legitimate Pope, and the council was dissolved in 1417, Poggio followed the pontiff on his return to Italy, as far as Mantua, where he suddenly left the papal retinue and repaired to England. Whether he left in disgust, or through fear for having expressed his sentiments too freely on church matters, is not clearly ascertained. While in Constance he had received an invitation from Cardinal Beaufort, Bishop of Winchester. His expectations however from Beaufort's liberality were disappointed; and at length, having received through some friends in Italy an offer to resume his office at Rome, he left England about 1421. Of his remarks during his residence in England there are scattered fragments in his published letters, and still more in the unedited ones. His picture of the manners and habits of the English is not flattering. He says that they were more addicted to the pleasures of the table than to those of learning; and that the few who cultivated literature were more expert in sophisms and controversial quibbles than in real science.

Poggio continued in his office during Martin's pontificate, pursuing at the same time his researches after MSS. and antiquities, for which latter object he made excavations at Ostia, and other parts of the Campagna. He also made Latin translations of the first six books of Diodorus Siculus, and of Xenophon's *Cyropædia*. Eugenius IV. having, in 1431, succeeded Martin V., was soon after obliged by a popular rebellion to remove his court to Florence. Then came the controversies between the Pope and the Council of Basil, which lasted during the rest of Eugenius's pontificate, till his death in 1447. The greater part of this time was spent by Poggio at Florence, or at a country-house he had purchased in the Val d' Arno, some say with the produce of some classical MSS. which he sold. He gives in his letters a description of this residence, which he had adorned with statues and other remains of antiquity, that he had collected in various places. He wrote there several works, among others his 'Discourse on the Unhappiness of Princes,' which he dedicated to Thomas of Sarzana, afterwards Pope Nicholas V., and his virulent invectives against Filelfo, who had attacked the character of Poggio's friend Nicoli. In these invectives the most horrible charges are brought against Filelfo, which however must not be taken literally, for it was the practice of Italian scholars in that as well as in the following ages, to abuse one another without any very strict regard to truth. When the two fierce disputants became reconciled, Poggio wrote a sort of disavowal of his former accusations, which is found at the end of the invectives. In 1435 Poggio married Selvaggia, of the family of Buondelmonte, of Florence, a young and handsome lady, with whom he lived happily. While making up his mind to his marriage, he wrote a dialogue on the question,—*An seni sit uxor ducenda?* From that time Poggio reformed his life, which had been before rather licentious. In 1437 he published a selection of his letters, written in Latin, like all the rest of his works, according to the fashion of that age. His friend Leonardo Bruni dying in 1444, Poggio composed a Funeral Oration to his memory. He wrote also other Funeral Orations,—for Cardinal Zabarella, who died at the Council of Constance; for the Cardinal Santa Croce, a patron of letters; for Lorenzo de' Medici, brother of the great Cosmo; for Cardinal Sant Angelo, who fell in the battle of Varna against the Turks, &c. His friend Nicholas V., being raised to the pontifical throne in 1447, Poggio, who had returned to Rome and resumed the duties of his office, addressed to the new pontiff an eloquent oration, of mixed eulogy and advice on the duties and dangers of his exalted station,—*Oratio ad summum Pontificem Nicolaum V.* He did not however forget his own interest, for at the end he speaks of himself as 'a veteran in the papal court, where he had lived for the space of forty years, and certainly with less emolument than might have been justly expected by one who was not entirely destitute of merit or of learning.' Nicholas, who was not displeased at Poggio's frankness, made him liberal presents. To this time belongs Poggio's treatise *De Varietate Fortunæ*, one of his best works, which presents a good view of Italian politics at the beginning of the 15th century, an interesting sketch of the remains of ancient Rome in Poggio's time, and a curious account of the travels of the Venetian, Niccolò Conti, in the east. He also wrote *Dialogus adversus Hypocritas*, in

which, as well as in his disquisition, *De Avaritia et Luxuria*, he inveighs against the vices of the clergy, and especially of the monks, which were certainly very flagrant in that age, and were the main cause that led to the great reformation in the following century. Notwithstanding his satirical freedom he preserved the good graces of Nicholas, in support of whose right to the papacy he wrote a bitter invective against his rival the antipope Felix, in which, as usual with Poggio, his accusations outstripped truth. A violent quarrel with George of Trebisond, about some literary matters, brought the two scholars to blows, and the Greek was in consequence obliged to quit Rome. In 1450, the plague being in Rome, Poggio withdrew to Florence, where he wrote his *Facetiae*, a collection of humorous anecdotes and repartees, some of which are very indecent. He also wrote *Historia Disceptativa Convivialis*, or discussions upon various philological, historical, and moral subjects; *Disputatio de Infelicitate Principum*, in which he speaks of princes in a strain of democratic contempt, rather odd in a man who had lived almost all his life at courts; *De Nobilitate Dialogus*, in which the various meanings of nobility are examined; *De Miseria Conditionis Humanæ*. In 1453, on the death of Carlo Aretino, chancellor of Florence, Poggio, through the influence of the Medici, was appointed his successor. He finally quitted the Roman court after having been fifty years in its service; and it was not without regret that he parted from his kind patron Pope Nicholas.

Having now access to the archives of Florence, he undertook a history of that republic.—*Historia Florentina*, lib. viii., which embraces the period from 1350 to 1455. It was translated into Italian by his son Jacopo, and printed in 1476, and afterwards republished in a more correct and improved form by Serdonati, Florence, 1598. The Latin text was not published till 1715, by Recanati, who prefixed to it a biography of the author. Poggio has been charged with marked partiality for his countrymen in his history. Another deficiency is noted by a grave authority, Machiavelli, who, in the preface to his own history, observes that both Poggio and Leonardo Bruni, two excellent historians, had diligently described the wars between Florence and the other states and princes, but with regard to the civil contentions of the republic, its internal factions and their results, they had been either silent or extremely laconic in their account, either because they fancied them beneath the dignity of history, or perhaps because they were afraid of offending the relatives and descendants of persons who had figured in those transactions.

Poggio died at Florence in 1459, and was buried with great honours in the church of Santa Croce, near his friend Leonardo Bruni. A statue of him by the sculptor Donatello is in the duomo or cathedral.

Poggio was one of the most distinguished scholars of the epoch of the revival of literature, and one of those who contributed most to the spreading of that revival. His long life, the offices of trust which he filled, his travels, his extensive correspondence, his multifarious learning, all contribute to render him one of the most remarkable writers of the fifteenth century. His works, especially his *Orations* and his *Epistolæ*, are remarkable for their eloquence and fluency of style, though their language does not equal in classic purity that of Poliziano and some other latinists of the following age. His sentiments are noted for their independence and frankness; even in his addresses to the great, his language, though courtly, is free from flattery. He had an ample share of Florentine causticity of humour, and his invectives are virulent and outrageous beyond the limits of all decency and justice; this was however the fault of the generality of his contemporaries. But he could also be a staunch friend as well as a violent enemy. Even as a monitor he could divest himself of all unbecoming asperity, as he proved by his reproof to Beccatelli, on the occasion of the latter having written an infamous book called the 'Hermaphrodite,' which was burnt in various towns of Italy by the public executioner. While Valia and others charitably wished that the author had shared the fate of his book, Poggio wrote to the Panormita, expressing his regret 'at seeing such a production from the pen of one capable of better things, reminding him that he was a Christian living among Christians, and not among the worshippers of the heathen gods, and exhorting him to apply himself in future to graver and more becoming studies.'

The works of Poggio have never been properly collected. The best edition, 'Poggi Opera,' 1539, wants many of them, and is also typographically incorrect. The dialogue 'against Hypocritas,' which was published separately at Lyons in 1679, had appeared before in a collection called 'Fisciculus rerum expostularum et fugandarum,' Cologne, 1523. The treatise 'De Varietate Fortunæ' was printed first at Paris, in 1793, with 800 seven-lined letters. But most of his letters still remain unedited and scattered about different libraries. A great number of them exist in the Riccardiana at Florence, which contain many curious particulars of his life and times. The Advocate Tonelli has made good use of them for his Italian translation of Shæpsher's clever 'Life of Poggio,' Florence, 1823. Poggio's funeral oration for Cardinal Zabarella, which he delivered before the council of Constance, in 1417, has been published separately. 'Oratio in funere Francisci Zabarelle, habita in Concilio Constantiensi, anno 1417,' Padua, 1655. But most of his other orations remained unedited. He also translated from the Greek, Lucian's 'Dialogus on the Ass,' which is printed in the best edition of his works. The miscellany called 'Poggiana,' by Lenfant, 1720, which professes to give an abstract of his life, opinions, &c., is full of errors. Poggio's 'Facelle' have gone through many editions.

Poggio's son Jacopo was a man of learning, but after being in his youth the friend of the Medici, he conspired with the Pazzi against Lorenzo, and being seized after the murder of Giuliano, was publicly hanged in 1478.

BRACELET [ARWILLA.]

BRACHELYTRA (Entomology), according to Mr. Stephens's arrangement of insects, forms the sixth division of the order Coleoptera. M. Latreille, however, places this tribe of insects as the second family of the Pentamerous Coleoptera. The insects of this section (which is by Latreille called Staphylinus) may be distinguished by the elongate form of the body and the shortness of the wing-cases, which in most instances scarcely cover one-third of the length of the abdomen; their maxillæ are furnished with only one palpus. The apex of the abdomen is provided with two vesicles, which can be protruded at the will of the animal.

The habits of the Brachelytra are very various, but the greater number of the species are found in putrid animal or vegetable substances, upon which they feed; some are carnivorous. The shortness of the wing-cases probably allows of a greater flexibility in the body.

BRACHINUS, a genus of coleopterous insects belonging to the section *truncatipennis*; generic characters—body oblong, head and thorax comparatively narrow, the latter generally somewhat of a truncated heart shape; palpi and antennæ rather thick, the terminal joint of the former is slightly thicker than the basal joints, and has its apex truncated; mentum emarginate, and furnished with a small tooth-like process in the middle.

The Brachini possess a remarkable power of violently expelling from the anus a pungent acid fluid; which, if the species be large, has the power of producing a discolouration of the skin similar to that caused by nitric acid. A loud report, considering the size of the insect, accompanies the expulsion of this fluid, which, being discharged, instantly evaporates.

About five species of the genus *Brachinus* have been listed in this country, of which *B. crepitans* is the most common; it is found under stones, and occurs plentifully in chalky strata. This species is rather less than half an inch long; the head, thorax, and legs are of a yellowish red colour, the wing-cases are greenish, or blue black. The antennæ are reddish, with the third and fourth joints black. Many of the species of *Brachinus* resemble the above in colour. The species of the genus *Apinus* (a genus very closely allied and differing chiefly in being apterous) are generally of a yellow colour, having four black spots on the elytra; the head and thorax are also often more or less suffused with black; they are likewise of a larger size for the most part, and abound more particularly in warm climates.

BRACHIONUS (Müller, Zoology), a genus of minute animals found both in stagnant fresh water and in sea water. Their organization has produced some doubt among naturalists as to their proper place in the scale of creation. Lamarck arranged them under his Rotifera (wheel-bearing animals) being the second section of his *Classe des Polypes*, and having one or two orbital and respiratory organs at the anterior of the mouth. Cuvier placed them in the first order

(*Rotifera*) of his *Infusoria*, which forms his 8th and last class of the Zoophytes—in others, the class at the extreme end of the animal kingdom. De Blainville also brings them under the Rotifera, which form the first section of his *Microzoaria heteropoda*. The following is De Blainville's definition of the genus:—

Body more or less covered by a shell (or sheath), formed of one or two pieces, and more or less prolonged posteriorly by a caudiform siphon, two tufts of vibratory cilia at the anterior extremity.

Savigny, Schweigger, Schrank, Bory de St. Vincent, Cuvier, have all contributed to throw light upon these microscopic creatures.

De Blainville thus writes in his 'Artinologie' (1834):—'In the impossibility under which we find ourselves of characterizing, by the particular disposition of their appendages, the genera, more or less numerous, which may be formed among the Microzoaria, we propose to extend to all the species, whose bodies are covered by a sort of shell of one or two pieces for a more or less considerable part of their extent, the denomination of *Brachion*, derived by Hill and adopted by Pallas and Lamarck * * *'. We have already observed many species of this genus belonging to the different sections. *Brachionus trocolaris* of the first section is common in all stagnant fresh waters; it is very probably the Rotifera of Hill, Essay 13, p. 268, concerning which that author gives very interesting details that show it to be a true entomostracous animal. [ENTOMOSTRACA.]

The Corona of Curti belongs also, without doubt, to this section.

We have also studied the *Trichoda pinnis* of Müller, which is certainly a Brachion. We cannot conceive how Müller could say that it creeps after the manner of the *Planaria*, for it attaches itself by the extremity of its tail, and it travels as if it were provided with a great number of appendages under its shell.

Brachionus ovalis has also been often presented to our observations. It has certainly two tufts of vibratory cilia before, and behind a pair of sufficiently long appendages, by the aid of which it is also able to fix itself. Its shell appeared to us to be bivalve; but of this we are not certain.

Brachionus patina we have seen once, and observed sufficiently well the particularities pointed out by Müller. It was in the water of one of the basins of the Jardin du Roi, containing an innumerable quantity of Entomostraca.

Upon the whole, we are very much inclined to think that the Brachions are only the young states of Entomostraca, whose habits for the most part they have.

Ehrenberg, who has distinguished himself by his famous researches into the organization of the Infusoria in general, and of the rotatory animals in particular, states in his memoir upon them (1834) that he has already discovered in the latter,

1. A system of organs of nutrition, with all their details.
2. A double sexual system, observed in its entire development.
3. The probable existence of a very extensive vascular system.
4. Distinct internal muscles and ligaments, having a disposition and force corresponding with the external organs of locomotion.

Brachionus trocolaris, which led him to many of his discoveries, is thus illustrated by him:—



[*Brachionus trocolaris*, highly magnified.]

a, vibratory cilia; b, lateral brachial organs; c, eye; d, pharynx and oesophagus; e, appendages of stomach; f, stomach; g, intestine; h, anus; i, tail.

De Blainville divides the genus into the following sections :

Species whose univalve shell is oval, much shorter than the body, prolonged posteriorly into a very long caudiform abdomen, which is provided at its termination with a pair of very short appendages.

Example. *Brachionus urceolaris*. (Müller.)

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Species whose oval, elongated bivalve shell almost entirely covers the body, and is terminated by a short caudiform abdomen, provided with a pair of appendages which are, in general, of some length.

Genus MYTILINA of Bory de St. Vincent.

Example. *Brachionus ovalis*. (Müller.)

Species whose body is entirely covered by an oval shield, which is nearly round, univalve, and terminated by a caudiform abdomen, without terminal appendages.

Genus PROBOSCEDIA of Bory de St. Vincent.

Example. *Brachionus patina*. (Müller.)

Species whose body, entirely covered by a nearly circular shell, is terminated behind by a pair of very long and setaceous appendages.

Genus SQUAMELLA of Bory de St. Vincent.

Example. *Brachionus bractea*. (Müller.)

BRACHIOPODA, or BRACHIOPODOUS MOLLUSCA (Zoology), Cuvier's fifth class of Mollusks, the Palliobranchians (*Palliobranchiata*) of De Blainville, being the first order of the latter's third class of Mollusks (*Acephalophora*).

This class, though comparatively low in the scale of creation, is interesting to the physiologist, and of considerable value to the geologist, who finds in the fossil forms no small portion of those natural medals which indicate the history of the stratification of our globe. We have, therefore, entered more largely into the natural history of the Brachiopoda than their consequence as organized beings would otherwise warrant in a work of this description.

Cuvier, in his anatomy of *Lingula anatina*, in the *Annales du Muséum*, first made known that organization, by which the mantle, in addition to its office of secreting the shelly defence of these bivalves, is made subservient to the circulating system. Instead of the branchiæ of the ordinary bivalves, he found in the situation usually occupied by them two fringed and spirally disposed arms, and that the branchiæ presented themselves on the internal surface of both lobes of the mantle in oblique parallel lines. He further found that these lobes were traversed by vessels of considerable size, which returned the blood from the organs of respiration, and that these branchial veins terminated in two symmetrical systemic hearts. Here was a new type of circulation, and to the mollusks which presented these interesting and important modifications he gave the name at the head of our article, significative of the fringed arms which in this class took the place of the foot or organ of progression in the cockle, &c.

Lamanon and Walsh had previously taken the analogous parts of *Terebratula* for branchiæ, and Pallas, who is not quoted by Cuvier, describes the arms of *Terebratula* with minuteness and accuracy, but considers them as branchiæ, and compares them to those of a fish.

De Blainville, in the 'Dictionnaire des Sciences Naturelles,' gives an account of the organization of *Terebratula*. But both Cuvier and De Blainville were led into error in their attempts to trace out some parts of the organization of *Terebratula*; and it was reserved for Mr. Owen, in his acute, accurate, and interesting paper, 'On the Anatomy of the Brachiopoda of Cuvier, and more especially of the Genera *Terebratula* and *Orbicula*,' published in the *Transactions of the Zoological Society of London*,* and derived from the dissection of specimens brought to this country by Mr. Cumming and Captain James Ross, R.N., fully to investigate the subject so as to leave little or nothing to be desired upon the subject of the anatomy of *Lingula* and of the two genera last named. Our limits will not permit us to follow the learned author through his memoir, the whole of which, together with the beautiful illustrations that accompany it, is worthy of the most attentive perusal by

the physiologist and zoologist; and we select the following 'General Remarks' as the part of the paper most appropriate for insertion here, premising that the generative system of the Brachiopoda is cryptandrous.

'On comparing together,' says Mr. Owen, 'the three genera of Brachiopoda above described, we find that although *Orbicula*, in the muscular structure of its arms and the proportion of the shell occupied by its viscera, is intermediate to *Lingula* and *Terebratula*, yet that in the structure of its respiratory organs its simple alimentary canal, and its mode of attachment to foreign bodies, it has a greater affinity to the latter genus. The modifications that can be traced in the organization of these genera have an evident reference to the different situations which they occupy in the watery element. *Lingula*, living more commonly near the surface, and sometimes where it would be left exposed by the retreating tide, were it not buried in the sand of the shore, must meet with a greater variety and abundance of animal nutriment than can be found in those abysses in which *Terebratula* is destined to reside. Hence its powers of prehension are greater, and Cuvier suspects it may enjoy a species of locomotion from the superior length of its pedicle. The organization of its mouth and stomach indicates, however, that it is confined to food of a minute description; but its convoluted intestine shows a capacity for extracting a quantity of nutriment proportioned to its superior activity and the extent of its soft parts. A more complex and obvious respiratory apparatus was therefore indispensable, and it is not surprising that the earlier observers failed to detect a corresponding organization in genera destined to a more limited sphere of action. The respiration indeed, as well as the nutrition of animals living beneath a pressure of from sixty to ninety fathoms of sea water, are subjects of peculiar interest, and prepare the mind to contemplate with surprise the wonderful complexity exhibited in the minute parts of these diminutive creatures. In the stillness pervading these abysses they can only maintain existence by exciting a perpetual current around them, in order to disengage the water already loaded with their effete particles, and bring within the reach of their prehensile organs the small malcula adapted for their support. The actions of *Terebratula* and *Orbicula*, from the firm attachment of their shells to foreign substances, are thus confined to the movements of their brachial and branchial filaments, and the slight divarication or sliding motion of their protective valves; and the simplicity of their digestive apparatus, the corresponding simplicity of their branchiæ, and the diminished proportion of their soft to their hard parts, are in harmony with such limited powers. The soft parts in these genera are, however, remarkable for the strong and unusual manner in which they are connected together. The muscular parts are in great proportion and of singular complexity, as compared with ordinary bivalves; and the tendinous and aponeurotic parts are remarkable for the singularity of their texture and appearance to those of the highest classes. By means of all this strength they are enabled to perform the requisite motions of the valves at the depths to which they are met with. *Terebratula*, which is more remarkable for its habitat, has an internal skeleton superadded to its outward defence, by means of which, additional support is afforded to the shell, a stronger defence to the viscera, and a more fixed point of attachment to the brachial current.'

The spiral disposition of the arms is common to the whole of the brachiopodous genera whose organization has hitherto been examined; and it is therefore probable that in the remarkable genus *Spirifer* the entire brachia were similarly disposed, and that the internal calcareous spiral appendages were their supports. If, indeed, the brachia of *Terebratula peitacea* had been so obtained, this species would have presented in a fossil state an internal structure very similar to that of *Spirifer*.

In considering the affinities of the Brachiopoda to the other orders of Mollusca, I shall compare them, in the first place, with the *Lamellibranchiate bivalves*, to which they present the most obvious relations in the nature and form of their organs of defence. To these they are in several respects superior. The labial arms are more complex prehensile organs than the corresponding vascular laminae either side the mouth of the *Lamellibranchiata*. The whole muscular system is more complex; and the opening as well as the closing of the shell being regulated by muscular action, indicates a higher degree of organization than where the antagonizing power results from a property of the cardinal ligament, which is independent of vitality, viz. elasti-

ticity. With respect, however, to the respiratory organs, the modifications which these have presented in *Orbicula* and *Terebratula* show the Brachiopods to be still more inferior to the Lamellibranchiata than was to be inferred from the structure of the branchiæ in *Lingula*; and notwithstanding the division of the systemic heart, I consider that there is also an inferiority in the vascular system. Each heart, for example, in the Brachiopoda is as simple as in *Ascidia*, consisting of a single elongated cavity, and not composed of a distinct auricle and ventricle, as in the ordinary bivalves; for in these, even when, as in the genus *Arca*, the ventricles are double, the auricles are also distinctly two in number; and in the other genera, where the ventricle is single, it is mostly supplied by a double auricle. The two hearts of the Brachiopoda, which in structure resemble the two auricles in the above bivalves, form therefore a complexity or superiority of organization more apparent than real. Having been thus led to consider the circulating as well as respiratory systems as constructed on an inferior plan to that which pervades the same important systems in the Lamellibranchiate bivalves, I infer that the position of the Brachiopoda in the natural system is inferior to that order of *Acephala*.

Among the relations of the Brachiopoda to the *Tunicated Acephala*, and more especially to the *Ascidia*, we may first notice an almost similar position of the extended respiratory membranes in relation to the mouth, so that the currents containing the nutrient molecules must first traverse the vascular surface of that membrane before reaching the mouth; the simple condition, also, to which the branchiæ are reduced in *Orbicula* and *Terebratula* indicates their close affinity to the *Ascidia*. But in consequence of the form of the respiratory membranes in the Brachiopoda, which is so opposite to that of the sacciform branchiæ of the *Ascidia*, the digestive system derives no assistance from that part as a receptacle for the food, and the superaddition of prehensile organs about the mouth became a necessary consequence. The Brachiopods again are stationary, like the *Ascidia*, and resemble the *Boltonia* in the pedunculated mode of their attachment to foreign bodies.

With the *Cirripeds* their relation is one of very remote analogy; their generative, nervous, and respiratory organs being constructed on a different type, and their brachia manifesting no trace of their articulate structure. In all essential points the Brachiopoda closely correspond with the *Acephalous Mollusca*, and we consider them as being intermediate to the *Lamellibranchiate* and *Tunicate* orders; not however possessing, so far as they are at present known, distinctive character of sufficient importance to justify their being regarded as a distinct class of Mollusks, but forming a separate group of equal value with the Lamellibranchiata.

The following is De Blainville's arrangement, slightly modified:

*

Shell Symmetrical.

Genus *TEREBRATULA* (Bruguières).

Animal depressed, circular or oval, more or less elongated.

Shell delicate, equilateral, subtriangular, inequivalve, one of the valves larger and more rounded (bombée) than the other, prolonged backwards into a sort of heel, which is sometimes recurved into a kind of hook-like process and pierced at its extremity by a round hole, but more frequently divided into a fissure more or less large and of variable form. The opposite valve generally smaller, flatter, and sometimes operculiform.

Of that complicated loop or internal support to which the arms are attached we shall presently speak at large.

Hinge on the border, condyloid, placed on a straight line, and formed by the two oblique articulating surfaces of the one valve placed between the corresponding projections of the other. A sort of tendinous ligament comes forth from the hole or fissure above described, by which the animal fixes itself to submarine bodies.

The following is Mr. Owen's description of the peculiar, complex, and extremely delicate testaceous apparatus, sometimes called 'the carriage-spring' by collectors, attached to the internal surface of the imperforate valve:

The principal part of this internal skeleton, as it may be termed, consists of a slender, flattened, calcareous loop, the extremities of which are attached to the lateral elevated ridges of the hinge; the crura of the loop diverge, but again approximate to each other as they advance for a greater or

less distance towards the opposite margin of the valve; the loop then suddenly turns towards the perforate valve; and is bent back upon itself for a greater or less extent in different species. When the loop is very short and narrow, as in *Ter. vitrea*, Brug., there is but a small tendency towards a reflected portion; but where the loop is of great length and width, as in *Ter. Chilensis*, Brod., *Ter. dorsata*, Lam., and *Ter. Sowerbii*, King., the reflected portion is considerable. The loop, besides being fixed by its origins or crura, is commonly attached to two processes going off at right angles from the sides, or formed by a bifurcation of the extremity, of a central process, which is continued forwards to a greater or less extent from the hinge; but it is sometimes entirely free, except at its origins, as, e. g., in *Ter. vitrea*. This reflected loop, forming two arches on either side the mesial plane, towards which their concavities are directed, I have figured as it exists in *Ter. Chilensis* and *Ter. Sowerbii*. It is represented of a similarly perfect form in *Ter. dentata*, by M. de Blainville in his 'Malacologie'; and the same apparatus in *Ter. dorsata* is very well figured by Chemnitz; by Sowerby, and more recently by G. Fischer de Waldheim. A similar form is also figured in another species of *Terebratula* by Poli.

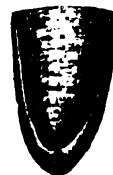
The arches of the loop are so slender, that, notwithstanding their calcareous nature, they possess a slight degree of elasticity and yield a little to pressure; but, for the same reason, they readily break if the experiment be not made with due caution. The interspace between the two folds of the calcareous loop is filled up by a strong but extensible membrane, which binds them together, and forms a protecting wall to the viscera: the space between the bifurcated process in *Ter. Chilensis* is also similarly occupied by a strong aponeurosis. In this species the muscular stem of each arm is attached to the outer sides of the loop and the intervening membrane. They commence at the pointed processes at the origins of the loop, advance along the lower portion, turn round upon the upper one, and are continued along it till they reach the transverse connecting bar, where they advance again forwards and terminate by making a half spiral twist in front of the mouth. It is these free extremities which form the third arm mentioned by Cuvier. These arms are ciliate on their outer side for their entire length, but the cilia are longer and much finer than the brachial fringes of *Lingula*; and except at the extreme ends, which have a slight incurvation, they are uniformly straight. There is thus an important difference between *Lingula* and those species of *Terebratula* which resemble *Ter. Chilensis* in the powers of motion with which the arms are endowed; since from their attachment to the calcareous loop they are fixed, and cannot be unfolded outwards as in *Lingula*. Owing to this mode of connexion, and their ciliated structure, their true nature was much more liable to be mistaken by the early observers, though it appears not to have escaped the discrimination of Linnæus, who, as Cuvier has observed, founded his character of the animal of *Anomia* on the organization of one of the *Terebratula* which he included in that genus.

The recent species are numerous and widely diffused, and the genus appears to be capable of flourishing in extremely warm and extremely cold regions, as well as in more temperate climates. Thus some of the species have been found in the Indian seas and at Java (*Ter. flavescens*, Lam., for example), and *Ter. psittacea*, brought home from the late expedition by Captain James Ross, R. N., was fished up from a depth of twenty-two fathoms near Felix Harbour, in lat. 70° N. on the E. side of Boothia. The average depth at which *Terebratula* has been found ranges from ten to ninety fathoms. De Blainville has thus subdivided the species:

A. Summit of the larger valve pierced with a round hole, well defined.

1. Valves triangular, with a straight anterior border

Example. *Terebratula digona* (fossil).



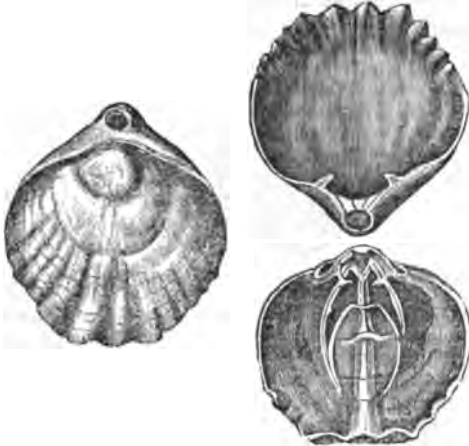
[*Terebratula digona*.]

2. Valves rounded at their anterior border.
 Example. *Terebratula globosa* (recent).



[*Terebratula globosa*.]

3. Valves raised as it were, or hollowed on the mesial line.
 Examples. *Terebratula sanguinea*, and *Terebratula dorsata* (recent).



[*Terebratula dorsata*. Internal views.]

4. Bilobated, the valves striated from the summit to the circumference, and deformed as it were at the junction of their border.
 Example. *Terebratula deformis* (fossil).



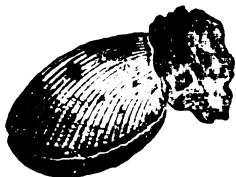
[*Terebratula deformis*.]

5. Trilobated, as it were, by the projection of the mesial part.
 Example. *Terebratula alata* (fossil).



[*Terebratula alata*.]

B. The heel of the larger valve deeply notched up to the border of articulation; notch or fissure rounded.
 1. Valves rounded at their anterior border.
 Example. *Terebratula rubra* (recent).



[*Terebratula rubra*.]

2. Valves sub-bilobated by the depression or emargination, which is apparent at the anterior border.
 Example. *Terebratula Caput Serpentis* (recent).



[*Terebratula Caput Serpentis*.]

C. The opening of the heel of the larger valve, marginal, triangular, and elongated.
 1. Valves rounded.
 Example. *Terebratula Lyra* (fossil).



[*Terebratula Lyra*.
 a, front view; b, side view.]

2. The valves sub-bilobated.
 Example. *Terebratula canalifera* (fossil).



[*Terebratula canalifera*.]

3. The valves rounded; a mesial partition (*cloison*) in the larger valve, placed between two in the smaller, so as to give in the cast the representation of five distinct pieces, three for one valve and two for the other.

(Genus *Pentastera*, Sowerby.—Fossil.)

D. Opening of the heel, marginal, triangular, but much larger transversely than longitudinally. Line of articulation quite straight.

1. The small valve provided in its mesial portion with a straight flattened support, bifurcated at its free extremity; a partition (*cloison*) in the other valve penetrating into this bifurcation.

(Genus *Strygocephalus*, DeFrance.—Fossil.)

Example. *Strygocephalus Burtini*.



[*Strygocephalus Burtini*.]

2. The lateral parts of the support formed of a very fine spiral filament, so as to produce two hollow somewhat conical masses which nearly fill the whole of the shell.

(Genus *Spirifer*, Sowerby.)

Example. *Spirifer trigonalis* (fossil).



[Internal view of *Spirifer trigonalis*, showing the spiral processes.]

E. The upper valve operculiform or very flat, system of support beginning to disappear.

1. Upper valve very flat.

Genus *Magas*, Sowerby (fossil).

Example. *Magas pumilus*.



[*Magas pumilus*.]

2. Upper valve very much excavated above, summit of the lower valve not pierced, and divided into two nearly equal parts by a well-developed mesial furrow.

Genus *Producta**, Sowerby (fossil). See *Min. Con.*, pl. 320.

Example. *Producta Martini*.



[*Producta Martini*.]

The fossil *Terebratulæ* (properly so called) are extremely numerous, and assist in the identification of strata from the supracretaceous group to some of the lowest formations in the grauwacke series, both inclusive.

As neither *Pentastera*, *Strygocephalus*, *Spirifer*, *Magas*, nor *Producta* have living representatives, they are placed here from the structure of their shells, which, judging from analogy, would indicate a brachiopodous construction allied to *Terebratula*. Indeed De Blainville retains that name throughout: but we think the differences of conformation warrant the separation of the fossils above distinguished, as subgenera of the *Terebratulinae*. They occur principally in the more ancient fossiliferous beds.

Genus *LINGULA*, Bruguières.

Shell subequivalve, equilateral, depressed, a little elongated, truncated anteriorly; the summit mesial and posterior with no trace of a ligament, but joined at the extremity to a long fibro-gelatinous peduncle, which is supposed to fix it vertically to submarine bodies: but in the specimen of *Lingula Audebardii* examined by Mr. Owen, there was no trace of the adhesion of any foreign body to the end of this peduncle. Muscular impressions multiple.

Example. *Lingula anatina*.



[*Lingula anatina*.]

* Originally written *Productus* by Martin, who used it as a specific name for a species of his *Coccyolithus Anomites*, as he called this fossil genus.

The recent species have been found at depths ranging from the surface to seventeen fathoms; and specimens have been taken in hard coarse sand from four to six inches below the surface of the sand.

Lingula has been found in a fossil state in the inferior oolite of Yorkshire, in the old red sandstone formation, and in other old fossiliferous beds.

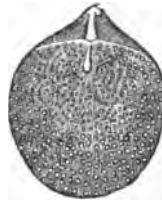
Genus *THECIDIA*, DeFrance, *Thecidium*, Sowerby. De Blainville thus describes the genus.

Animal entirely unknown, but very probably differing but little from that of *Orbicula*.

Shell equilateral, regular, very inequivalve, and sufficiently similar to the *Terebratulæ* of the latter sections; one valve hollowed, the heel or hook recurved, entire, without a fissure and adhering; the other flat, operculiform, and without any trace of the internal support.

Hinge longitudinal; articulation by two distant condyles, as in the *Terebratulæ*, with a large mesial tooth in the flat valve fitting between the condyloid teeth of the concave valve.

Example. *Thecidium radiatum*.



[*Thecidium radiatum* viewed from above.



a, nat. size.]

The recent species above mentioned is an inhabitant of the Mediterranean, and found among the common red coral of the Tuscan Seas.

The fossil species are tolerably numerous, and Sowerby says that those which he had seen appeared to belong to the chalk, and were brought from Maastricht, and from Orglandes in Normandy.

Genus *STROPHOMENA*, Rafinesque; (fossil.)

Shell regular, equilateral, subequivalve; one valve flat, the other slightly excavated: articulation straight, transverse, with a small projection notched or dented laterally transversely. No trace of an internal support.

Example. *Strophomena rugosa*.



[*Strophomena rugosa*.]
View of lower side.

As *Strophomena* has no living representatives, at least none yet discovered, there can be no description of the animal, which is however, judging from the construction of the shell, most probably brachiopodous.

The fossil genera *Plagiostoma*, *Dianchora*, and *Podopsis* (see these titles) are placed by De Blainville under this section. We do not however think that there is such pregnant evidence of a true and entire brachiopodous organization, as to warrant this decided position under the Brachiopods. Indeed De Blainville himself says that some of the *Plagiostomata* are of the family *Terebratulæ*, and that the others (he instances *Plagiostoma Mantellii*) are entirely different, and he allows that these last ought to form a distinct genus of the family of Subostraceans. DeFrance places *Podopsis* among the oysters.

* *

Shell *unsymmetrical, irregular, always adherent.*

Genus *ORBICULA*, Lamarck.

Shell orbicular, very much compressed; inequilateral, very inequivalve; the lower valve very delicate, adhering; the upper valve patelliform, with the summit more or less inclined towards the posterior side. Fissure of adhesion in the lower valve subcentral. Hinge toothless.

Example. *Orbicula lamellosa*.

[*Orbicula lamellosa*.]

A single specimen, showing the cilia.

The recent species are found attached to stones, shells, sunken wrecks, &c., and have been found at depths ranging from not far below the surface to seventeen fathoms.

Fossil species are said to have been found in the lower green sand of Sussex, in the Speeton clay of Yorkshire, in both the great and the inferior oolite, in the carboniferous limestone, and in the Ludlow rock below the old red sandstone.*

G. B. Sowerby has satisfactorily proved that Lamarck's genus *Discina* must be expunged, it having been formed from specimens of *Orbicula Norvegica*, sent by Sowerby to Lamarck.

Genus CRANIA, Retzius and authors.

G. B. Sowerby, who has done so much in the thirteenth volume of the 'Linnean Transactions' to unravel the confusion which had previously been created by authors, gives the following generic characters.

Shell inequivalve, generally equilateral, rather irregular, orbicularly subquadrate, and flattish; the upper valve patelliform, having its umbo or vertex rather behind the centre; the lower valve attached by its outside, the greater part of it being generally extended over the substance to which it adheres; (and in this respect it differs greatly from *Orbicula*, which is attached by means of a ligament which passes through a fissure in the centre of the lower valve.) There are four muscular impressions in each valve; of those in the upper valve two are in the posterior margin and the other two nearer the centre, but not always very near to each other; of those in the lower valve, two are nearly marginal and rather distant, but the other two are nearly central, and so close together, that they appear to form but one: they in general have a small projection between them; and the whole of the muscular impressions in the lower valve are frequently lost by decomposition in the fossil species, so as to appear only three oblique perforations, as Lamarck has described them.

Example. *Crania personata*.

[*Crania personata*.]

external view; 2, 3, internal view.

The recent species, and this is the only one known, is found adhering to stones and shells at very great depths. It is stated in the 'Zoological Journal,' by the Rev. M. J. Berkeley, that a specimen of *Crania personata* was taken by Captain Vidal, at the depth of 255 fathoms.

There are several fossil species, mostly from the chalk.

BRACHY'CERUS, a genus of coleopterous insects of the family *Curculionidæ* (included in the genus *Curculio* by Linnæus). Generic characters—rostrum short; antennæ inserted towards the apex of the rostrum, short, nine-jointed; the basal joint longest, the terminal joint forming a knob; tarsi with all the joints entire, and without pubescence beneath. The species of this genus are apterous, and generally very rough. They appear to be peculiar to the south of Europe and Africa, and live upon the ground.

BRACHYPODI'NÆ (Zoology.) Swainson's name for a sub-family of the *Merulidæ*, containing the following genera or rather sub-genera:—

Brachypus, Swainson, thus characterized by him: bill short; *rietus* (gape) bristled. Feet small, weak; lateral toes equal. Hinder toe as long as the tarsus. Type *Brachypus dispar*, Sw. (*Turdus dispar*, Horsfield.)

Chloropsis, Jardine and Selby. Bill more lengthened; the tip much hooked; the notch forming a small distinct

tooth. *Rictus* smooth. Feet small; lateral toes unequal; the hinder toe rather shorter than the tarsus.

Iora, Horsfield. Bill nearly as long as the head; lengthened conic. *Rictus* smooth. *Tarsi* somewhat lengthened; the anterior scales divided. Tail even. Type *Iora scapularis*, Horsfield.

Andropodus, Swainson. Bill short; the upper mandible serrated near the tip. Neck with setaceous hairs. Type *L'Importan*, Le Vaillant.

Hæmatornis, Swainson. Bill short; *rictus* bristled. Lateral toes unequal. Hinder toe shorter than the tarsus. Types. 1. *Chrysorrhœus*, Le Vaillant. 2. *Turdus harrhous*, of authors. 3. *Turdus bimaculatus* of Horsfield. 4. *Erythrotis* of Swainson (*Lanius jocosus* of Linnæus).

Mr. Swainson does not seem to have been aware that the appellation *Brachypus* had previously been conferred by Fitzinger on a sub-genus of *Saurians*, belonging to the *Chalcides* of Daudin, and it should, therefore, be no longer used to distinguish a sub-genus of birds. The term at the head of this article, which Mr. Swainson has applied to the sub-family, might be changed with advantage; for it may be liable to create confusion when unexplained by contexts, and leave the reader in doubt whether a sub-family of birds or reptiles is intended.

For Mr. Swainson's further account of *Brachypodinae*, see Fauna Boreali-Americana, vol. ii., where the characters of the subgenera given above will be found.

BRACHY'PTERYX (Zoology), a genus of birds approaching to *Saxicola*, (thus defined by Dr. Horsfield:—

Essential character. Bill with the culmen carinated between the nostrils, the sides being flattened, and rounded towards the apex with the sides convex; edges subinflected. Wings very short and obtuse. Tail moderate and rounded. Feet elongated and weak; the tarsi slender; the toes slender and the claws very much compressed. Hallux and hind toe comparatively large.

Natural character. Bill moderate, rather strong, subcylindrical, broader at the base than it is high, subconical beyond the middle, attenuated; the culmen, or ridge, carinated and angulated between the nostrils, with the sides flattened, and beyond that point somewhat thickened, rounded, the sides being convex, arcuated towards the apex and notched. Mandible depressed at the base, the sides erect, turned inwards towards the apex, *myxa* rather strong, subinclined. Edges of the jaw and mandible subinflected.

Nostrils very large, placed in a somewhat rounded, basal, elongated, obtuse hollow, covered above and posteriorly by a membrane.

Wings very short and obtuse. Quills entire, the first only spurious, from the second to the fifth gradually increasing, from the fifth to the tenth longer and nearly equal, the rest gradually shortening. Tail moderate, rounded; the feathers twelve.

Feet elongated and weak. Tarsi slender, twice as long as the middle toe. Toes compressed, very slender, the middle longest, the lateral toes nearly equal, the outer toe sub-coalescing with the middle toe at the base. Claws very much compressed and very acute.

Brachypteryx montana, Horsfield, the species on which the genus is founded is thus described by the author:—Weight of the male five, and of the female six, drachms. In the length of the two sexes scarcely any difference is perceptible. The measure is nine inches and nine lines from the tip of the bill to the end of the tail; to the extremity of the claws the length is six inches. In the male, the head, neck, and breast have a dark indigo blue tint, inclining to black, with a greyish reflection on the surface, variegated with lighter and darker shades; on the throat and the lower part of the neck this colour passes into grey; on the forehead it is more intense, inclining to black. Above the eyes is an oblong white spot. The back, the wings above the shoulders, the coverts of the tail, the vent, hypochondriac and thighs are deep chestnut brown, with a ferruginous reflection. The wings underneath, and the tail at the extremity and underneath, are pure blackish brown; the shafts of the quill and tail feathers are black and shining. The inner vanes of the quills and the tail feathers generally have a very deep brown colour. The exterior vanes of the tail feathers are slightly tinted with the ferruginous lustre of the upper parts. The lower parts of the breast and abdomen are whitish. The plumes on the posterior portion of the body are very thickly disposed; the vanes consist of long, delicate, silky, pendulous laminae or filaments, forming a

* Broderip, Trans Zool. Soc. vol. I. p. 141.

lax covering about the lower parts of the abdomen, the hypochondria, and the root of the tail. The irides have a dark hue. The bill is black and the *tarsi* are deep brown. The tint of the claws is somewhat lighter.

In the female, the dark blue tint, which in the male covers the head and neck, extends over the body generally, and also marks the exterior vanes of the quills. The interior vanes of the latter and the tail feathers are dark brown, inclining to black. The throat and neck underneath have a dark greyish tint. The abdomen is greyish white. Over the eyes it has, like the male, a white spot, and the bill and tarsi also agree with that. The covering of the abdomen, vent, and thighs is likewise long, delicate, silky, and pendulous.

Dr. Horsfield met with this species in one situation only, at an elevation of about seven thousand feet above the level of the sea. He thinks it probable that it may be found on all the peaks of Java, which are covered with thick forests, accommodated to its peculiar habits. The recurrence, he observes, of several quadrupeds and birds, at a certain elevation, is as regular in that island as that of many plants and insects. Although local in its residence, Dr. Horsfield found the bird very numerous on Mount Prah, which, he says, in the luxuriance of its vegetation and gloomy thickets, is probably not surpassed in any portion of the globe. In his daily excursions he uniformly observed and occasionally surprised it in its short sallies among the openings of the forest. It was chiefly found on the lowest branches of trees or on the ground. As the shortness of its wings incapacitates it for elevated or distant flights, its motions are low, short, and made with great exertion. It lives in the thickest coverts, feeding on the larvæ of insects, worms, &c., and there it forms its nest on the ground. 'It utters,' says Dr. Horsfield, 'almost without interruption, a varied song. Its common note is a quickly reiterated babbling, resembling that of the *curruca garrula* of Brisson, and other birds of this family: it also has a protracted plaintive note, but it sometimes rises to higher and melodious warblings, which, in the general silence of these elevated regions, afford an inexpressible sensation of delight to the mind of the solitary traveller.'

This bird is the *Ketek* of the Javanese and *Mountaineer Warbler* of Latham. (See Dr. Horsfield's 'Zoological Researches in Java and the neighbouring Islands,' and 'The Transactions of the Linnæan Society,' vol. 13.)



[*Brachypteryx montana*.]

The upper figure represents the female; the lower, the male.

BRACHYPTERES (short-winged birds), Cuvier's name for those birds generally known by the name of 'Divers.' [DIVER.]

BRACHYPUS. [BRACHYPODINÆ and CHALCIDES.]

BRACHYTELES (Zoology), a genus of *quadrumana*, separated from *Ateles* by Spix, on account (among other differences) of the very small development of the thumb. [ATELES, species 7, 8.]

BRACKLEY, a bor. and m. t. in the hund. of King's Sutton, Northamptonshire, 56 m. N.W. from London, and 18 m. S.W. from Northampton. Brackley is said to derive its name from the *brakes* with which the district was once overspread. Although it has long been a poor place, it seems to have been in a very flourishing condition both before and after the Conquest, being particularly eminent for its share in the wool trade. It existed as a corporation in the 56th of Henry III., although the place was not governed by a mayor until the 7th of Edward III., at which time it was required to send up three merchant staplers to a council concerning trade held at Westminster. It never again sent representatives until the last parliament of Henry VIII., after which it continued to send two members till it was disfranchised by the Reform Bill. The market is first distinctly noticed in 1217. It is now held on Wednesday; and there are nominally five fairs, of which only that on St. Andrew's day is of any importance. The pop. of the bor. amounted, in 1831, to 2107 persons, of whom 1094 were females. The town, which is chiefly built with unhewn stone, extends up a gentle ascent on the N. bank of the Ouse, which is here a small stream, crossed by a bridge of two arches.

Brackley is divided into two par., ecclesiastically united, but otherwise distinct. The par. church is dedicated to St. Peter. When erected is not known; but the vic. was endowed in 1223. The living is in the diocese of Peterborough, and is worth 359*l.* per annum. The other church, dedicated to St. James, is regarded as a chapel of ease to the former; it was considered old even in Leland's time. The living is a curacy, not in charge, subject to the vic. There was an hospital here, founded somewhere between 1146 and 1167, by Robert Bossu, Earl of Leicester. The estates with which it was endowed were afterwards given to Magdalen College, Oxford, on condition of maintaining a priest there to say mass for the soul of Lord Francis Lovel; a duty which at the Reformation was exchanged for that of supporting a free school. This school still exists. It is held in a plain building erected in 1787: the master receives 18*l.* per annum from Magdalen College; and 1*l.* per annum has been left to be distributed in prizes among the free scholars. The chapel of the old hospital had fallen into a very ruined condition; but was thoroughly repaired about the middle of the last century, by Mr. John Welchman, who also provided a stipend to enable divine service to be performed therein every alternate Sunday. The son of the same person left 100*l.* for the education of four poor boys and as many girls. Since the establishment of a national school in 1818, the interest has been paid over to its treasurer, in aid of voluntary contributions. There are almshouses founded by Sir Thomas Crewe in 1663; and there have been various bequests of rents and money, applicable to the repair of churches, the apprenticing of boys, and the relief of the poor. There is a handsome town-hall.

(Leland's *Itinerary*; Bridge's *Hist. and Antiq. of Northamptonshire*; Baker's *Hist. and Antiq. of the Co. of Northampton, &c.*)

BRA'CON, a genus of insects of the order Hymenoptera and family Ichneumonidæ (of *Latreille*). The insects of this genus are remarkable for the hiatus which there exists between the mandibles and the clypeus. The maxillæ are prolonged inferiorly; the second cubital cell of the wing is tolerably large and square; the ovipositor is long.

BRACT, the last leaf, or set of leaves, that intervenes between the true leaves and the calyx of a plant. When the time arrives for a plant to fructify, a change comes over its constitution, and parts are expanded, which although under ordinary circumstances they would have become leaves, yet at this peculiar time are less developed and appear in the form of scales, or half-formed leaves. Of these the external are bracts, the next combine with each other and become calyx, the next assume the form of petals, and so on. Therefore whatever intervenes between the true leaves and the calyx is bract.

BRACTION, one of the writers who are meant when the phrase is used 'our ancient law-writers,' or 'the ancient

text-writers of our law.' These writers lived from the close of the twelfth to the middle of the fifteenth century. The oldest is Glanville, whose *sera* is referred to the reign of Henry II. and Richard I. Bracton lived in the reign of Henry III. The others are Britton, Littleton, and the unknown authors of 'Fleta,' 'The Mirror of Justices,' 'The Doctor and Student,' and the 'Old Book of Tenures.' These books all relate to the nature, principles and operation of the antient laws and constitution of the realm, and together with a few minor treatises, the collections of Welsh, Saxon, and Norman laws, the charters and statutes, the year-books which contain notes of causes and decisions, the records of writs, inquests, surveys, and of the receipts and issues by and from the king's revenue, and the incidental information to be found in the chroniclers, form the study of those persons who wish to become acquainted with the history of English judicature, of the courts for the administration of justice, and generally of the various operations of the English law.

Bracton's work is entitled 'De Consuetudinibus et Legibus Anglo-nianis.' It is divided into five books, and the following is a slight sketch of the nature and object of the work.

In the *first* book he treats of distinctions existing in respect both of persons and things; in the *second* of the modes in which property may be acquired in things; in the *third* of actions or remedies at law. The *fourth* book is divided into several sections, which treat on the assize of *novel disseisin*, the assize of *ultima presentatio*, the assize of *mort d'ancestor*, the writ of consanguinity, the grants in *libera eleemosyna*, and on dower. The *fifth* and last book is also divided into sections, in which the author treats of the writ of right, essoins, defaults, warranty and exceptions. A larger abstract of the contents of this work may be found in Reeves' *History of the English Law*, vol. ii. p. 86, &c. A treatise so methodical in its arrangements, so precise in its statements, and so abundant in its information, must have been the work of some very able person. Little however is now known of this author. The writers to whom we are indebted for collecting what could be recovered of the English authors of the middle ages, are Leland, Bale and Pitz, of whom the two former lived in the reign of Henry VIII. and supplied Pitz, who was a Catholic writer in the reign of Elizabeth and James I., with most of the information which his work, valuable as it is, contains. Their statements that Bracton was a judge of the Common Pleas, and that he was Chief Justice of England, are now regarded as questionable. There is better reason to believe that he was a Henry de Bracton who delivered law lectures in the University of Oxford towards the middle of the thirteenth century, and that he sat, once at least, as a justice itinerant in the reign of Henry III. The value of the work, and the high esteem in which it was held, is manifest by the numerous copies which were made of it before the invention of printing opened so much easier and cheaper a way of multiplying copies of valuable writings. The pains which it must have required to transcribe the work, and consequently the expense of it, may be collected from the extent of the work, which fills in its printed form not less than 888 folio pages. Many of these manuscript copies exist. It is said that there are no less than eight in the various libraries which compose the book-department of the British Museum. In 1569 it was printed in a folio volume, and again in quarto in 1640, the text of the old edition being collated with that of some of the manuscripts. But this collation is supposed to have been imperfectly performed. An edition founded on one of the best of the existing manuscripts, compared with the rest and with the printed copies, would be acceptable, especially as the old editions, owing to the manner in which they are printed, are uninviting if not repulsive, and as Bracton is not included in the edition of our early law writers by Mons. Houard, a French lawyer, 4to. 1776, by whom they are printed with a French translation, to illustrate the connexion between the early jurisprudence of France and that of England.

BRADDOCK, EDWARD, lost his life in Virginia, by the French and Indians, in the war in which General Wolfe afterwards fell on the heights at Quebec in Canada. The French having determined to connect their Canadian colony with their other possessions in Louisiana by a chain of fortified military stations which interfered with the British territories, General Braddock, with an army of 2000 English, was despatched to Virginia, where he arrived in February, 1755, at Richmond. With 390 waggons of provisions,

ammunition, and baggage, he reached in July the Monongahela, a branch of the river Ohio. Washington, who was then at the age of twenty-three, joined him as a volunteer, in the capacity of aide-de-camp; and from his accurate knowledge of his native country, and of the Indian mode of warfare, would have furnished the English commander with the information requisite for the success of his expedition, but Braddock's self-sufficiency contemptuously disregarded the advice of American officers. Having advanced on the 9th of July within six miles of Fort du Quesne, now Pittsburgh, where he supposed the enemy awaited his approach, his columns, in passing silently through a deep forest ravine, were suddenly struck with the utmost terror by the frightful war-whoop of the Indians from the dense thickets on both sides, and the murderous fire of invisible rifles that with infallible aim killed each its man. Rushing forward they were surprised and attacked in front by the French forces, while the Indian warriors, leaping by hundreds from their ambush, fell upon them with fury in the rear. Their strange and hideous appearance, and the echo of their piercing dog-like yelp, in such a gloomy wilderness of trees, so startled the English soldiers, who for the first time heard it, that the panic which seized them continued until half the army was destroyed. With the single exception of Washington, who received several rifle balls through his dress, and had two horses shot under him, no one officer escaped alive. Braddock himself, after mounting in succession five horses, was shot, and carried off on a tumbrel by the remnant of his troops, who fled precipitously forty miles to the place in which the baggage had been left, where he died. Throughout Virginia, the inhabitants of which feared an invasion from the French, this disastrous defeat occasioned great consternation; and to the present day it is there a subject of interesting discussion, as connected with the career of Washington. (*History of the late War in America and the Campaigns against his Majesty's Indian Enemies*, by Thomas Mante, 4to. 1764; *Gent. Mag.*, vol. xxv. p. 378.)

BRADFORD, GREAT, a par. and m. t., in the hund. of Bradford, Wiltshire, 93 m. W. from London, and 28 m. N.W. from Salisbury. The name of Bradford is a contraction of the Saxon name Bradanford, or the *broad ford* over the Avon, which divides the town into two parts, called the *Old Town* and the *New Town*. Most of the buildings are arranged in three streets, rising one above another, on the brow and slope of a hill which rises abruptly on the N. side of the river: the situation is altogether very pleasing, as the banks of the riv. below the town abound in beautiful and picturesque scenes; and the well-wooded hills rise in some places boldly from the margin of the river. There are several fine old mansion-houses in the neighbourhood.

The town seems to have been a place of some consequence in the time of the Saxons. It was then the site of a monastic institution founded by St. Adhelm, who was himself the abbot, until appointed Bishop of Worcester in 705. It was given to the great nunnery at Shaftesbury in 1001, by King Ethelred, in atonement for the murder of his half-brother by Queen Elfrida. After this we hear nothing of a religious society at Bradford. Bishop Gibson says the monastery was destroyed by the Danes. In 954 the celebrated St. Dunstan was elected Bishop of Worcester, at a synod held at Bradford. It is only by its connection with such circumstances as these that the importance of a town in these early times can be estimated, or even its existence discovered. Bradford seems to have retained its former degree of relative importance after the Conquest; for we find it mentioned among the towns which were privileged by Edward I. to send members to parliament. It does not appear however that this right was exercised more than once. It is unknown whether it was ever a chartered bor. with separate jurisdiction; but if so, this distinction, like the other, must soon have been lost. It is still however the chief town of the hund. to which it gives name. Monday is the m. d.; and there is a fair on Trinity Monday. Two justices of the peace administer the local government. The par. of Bradford which is very extensive, contained 2294 houses in 1831, when the pop. amounted to 10,102 persons, of whom 5241 were females. The pop. of the town is about one-third of the whole.

The town has for many centuries been noted for its fine broad-cloths, which have at all times formed its principal manufactures. 'The town of Bradford standeth by cloath making,' Leland said three centuries ago; and this is true. The prosperity of the place is now also much pro-

meted by the Kennet and Avon can., which passes by Bradford, and opens a communication by water with the cities of Bath, Bristol, and London, and with the towns of Trowbridge, Devizes, Hungerford, Reading, &c. This important can., in its way towards Bathford, follows the course of the Avon, which it crosses at different parts on viaducts, one of which is situated in the neighbourhood of Bradford. The riv. at Bradford is crossed by two bridges. One of these is of great but uncertain age: it was the sole bridge in Leland's time, and is noticed by him as having 'nine fair arches of stone.' Over one of the piers there is a small square building with a pyramidal roof, which may perhaps have been originally designed as a chapel, where contributions were levied for the support of the hospital, which stood at one end of the bridge. There is now another bridge of four arches over the same stream.

The houses in Bradford are built with stone; but the streets are mostly very narrow. The town has however undergone much improvement of late years, and the streets have in several instances been widened. There is no public building of any note except the church, which stands at the foot of the hill. The living is a vic., in the gift of the Dean and Chapter of Bristol, and is valued in the recent returns at 596*l.* per annum. All the principal denominations of Dissenters have chapels at Bradford.

There is a charity school at Bradford for the education of sixty boys, which was opened in 1712, and the income of which amounts to 43*l.* 8*s.* 4*d.*; there is also a payment from a separate source to the minister for teaching poor children to read. There are two sets of almshouses, one for men and the other for women, besides sundry small benefactions for the relief of the poor.

(Leland's *Itinerary*; Gough's edition of *Camden's Britannia*; Britton's *Beasties of Wiltshire*; &c.)

BRADFORD, a m. t. and par. in the W. Riding of the co. of York, and in the Morley division of the wap. of Morley. It is one of the new bor. under the Reform Act, and sends two members to parliament. The bor. comprises the t. of Bradford, Manningham, Bowling, and Horton. The pop. of the bor. is 43,327; the number of houses of 10*l.* rent and upwards 1083. The returning officer for the bor. is appointed by the sheriff of the co. The pop. of the par. of Bradford is 76,996, and includes the following t.:—Bradford, 23,233; Bowling, 6959; N. Bierley, 7254; Eccleshill, 2570; Manningham, 3564; Allerton, 1733; Clayton, 4469; Haworth, 5835; Heaton, 1452; Horton, 10,782; Shipley, 1926; Thornton, 6968; Wilsden, 2252. Bradford is one of the polling-places for the W. Riding members. It is 163 m. from London in a straight line; its measured distance is 192 m. It is 10 m. from Leeds, and 33 from York. The area of the par. is about 33,710 acres; its length being nearly 15 m. and its average breadth 4 m.

History.—Bradford is situated on a small brook which falls into the Aire, and is at present very contracted; in earlier days, when swollen by the floods from the neighbouring hills, it may have been sufficiently wide to have deserved the name of *Broadford*, from which it is supposed the present name of the town is derived. This town is mentioned in 'Doomesday Book' (Bawdwen's translation, p. 141.) In Saxon times Bradford formed part of the extensive par. of Dewsbury; it was afterwards included in the rich barony of Pontefract, which was in the possession of the Lacies. 'The whole district was immediately dependent upon Dewsbury in an ecclesiastical, and on Pontefract in a civil sense.' (Whitaker's *Loidis in Elmete*, p. 350.) This powerful family had a castle at Bradford, which served as a protection to their retainers and other persons who would come to settle here from a less protected district: thus gradually would rise the vil., town, church, and market. The early history of the town is connected with that of its castle; the Lacies had large possessions in Lancashire, and it is supposed that Bradford was their frequent resting-place in passing from Pontefract into that co. From an inquisition taken in 1316, it appears that the town consisted of twenty-eight burghage houses; these, with the tenants at will and villanes, would make its pop. amount to about 300. A corn-mill and a fulling-mill are mentioned in the inquisition; so that the rudiments of manufactures were early established. The last of the Lacies, Alice, married the Earl of Lancaster; and Bradford, in common with the other possessions of her family, went to increase the estates of that duchy. Leland mentions Bradford as a rising town that 'stood much by clothing;' comparing it with Leeds,

he says that the latter, though 'as large as Bradford, is not so quik as it.'

During the civil wars between the royalists and parliamentarians, Bradford espoused the latter cause, held a severe contest with, and twice defeated the royalists. With Sir Thomas Fairfax at their head, the inh. marched against Leeds, and wrested that town from the cavaliers. They were however themselves defeated a short time after by the Earl of Newcastle on Adwalton Moor, with immense slaughter. (Scatcherd's *Hist. of Morley*.) Though much impoverished, the republican spirit was not extinct at Bradford, and the popularity of their cause was soon made manifest throughout the co. by the successes of Fairfax, the declension of the cause of Charles, and the decisive battle of Marston Moor.

After these wars Bradford made little progress for a long time, and it was much depressed, in common with other manufacturing towns, during the American revolutionary war. On occasion of the revolutionary war in France, when fears of invasion were predominant throughout England, the loyalty and patriotism of the people of Bradford were very conspicuous. They raised a corps of volunteers and furnished their number of men for the navy with little difficulty.

In 1812 a spirit of insubordination was diffused through the wide and densely-populated district of which Bradford is the centre, in consequence of the introduction of certain kinds of machinery which, by lessening the demand for manual labour, seemed opposed to the interests of the operatives, and at first threw numbers out of employment. The machines most obnoxious to the workmen were those employed in the dressing of woollen cloth. 'The lawless system under which the insurgents acted, was called *Luddism*, and an imaginary personage styled *General*, alias *Ned Ludd*, was their reputed commander. To effect the destruction of machinery, and to attack the buildings in which it was contained, fire-arms became necessary; hence bands of men confederated for the purpose, and, bound by illegal oaths, were found prowling about the disturbed districts by night, rousing the inh. from their beds, and demanding the arms provided for the defence of their dwellings. In the W. Riding several mills were entered, and the shears employed in the dressing of woollen cloth by the new system broken and destroyed.' In the course of that year government augmented the power of the magistracy in the disturbed districts, and passed an act which rendered the administering of illegal oaths a capital offence. Sixty-six persons were apprehended and committed to the county gaol, of whom seventeen were executed. This terrible example extinguished every vestige of Luddism in the co. The above account and extracts are drawn from an interesting detail of the circumstances attending these disturbances, which is given in Baines's *History and Directory of Yorkshire*, vol. i. p. 551.

In 1825 occurred a strike for wages, which was protracted during ten months, at an immense expense to the trades' unions, and at a dreadful sacrifice of comfort on the part of the operatives, who were plunged into a state of poverty from which they were long in recovering. Since that date, the history of the trade of Bradford has been one of continued prosperity, the effects of which are visible in the modern improvements of the town, and the apparent healthiness and happiness of every class of its active and intelligent pop. During this period schools have been established and well attended; a mechanics' institute, a philosophical society, and a library have also helped to spread a knowledge of those principles on which alone society can be safely based.

Manufactures.—The chief manufacture of Bradford and the neighbourhood is worsted stuffs. The spinning of worsted yarn employs a great number of persons, and the stuffs are woven from the yarn. Woollen yarn for the manufacture of cloths, broad and narrow, is also spun and woven at Bradford in considerable quantities, but the worsted manufacture is the staple employment of the place, Leeds and its dependencies being the more immediate seat of the woollen manufacture. The piece hall, which is the mart for stuff goods, is 144 ft. long by 36 broad, and has a lower and an upper chamber. The manufacturers of Bradford are characterized by their skill, enterprise, and diligence. The business which is transacted in their piece hall at the Thursday's market is very great, and forms one of the most animated commercial scenes in the kingdom. Many proprietors of worsted mills supply the small manufacturers

with yarn, besides employing a great number of looms themselves. Machinery, worked by steam, has almost superseded manual labour in the stuff-manufacture, the weaving being now generally done by power-looms. The stuffs manufactured at Bradford are chiefly dyed at Leeds, the proprietors of the dye-houses being among the largest purchasers in the Bradford market.

The iron trade has long flourished in the neighbourhood of Bradford. Mr. Hunter, the historian of Sheffield, considers that the iron-mines of Yorkshire were explored by its Roman inh., and he mentions the 'remarkable fact, that in the midst of a mass of scoria, the refuse of some antient bloomery near Bradford, was found a deposit of Roman coins.' There is an abundant supply of iron ore and coal, both of excellent quality; and the well-known ironworks at Bowling and Low Moor are only a short distance from Bradford. At these foundries some of the most ponderous works in cast-iron are executed. A vast number of workmen are employed in the different departments of the establishments—from the raising of the ore and coal, to the various marketable states of the metal. These ironworks have the reputation of being carried on with great skill; the improvements of modern times having been successfully introduced in the different branches of the manufacture.

The principal merchants and manufacturers in the trades of Bradford are wool-staplers, wool-combers, worsted-spinners and manufacturers, worsted-stuff manufacturers, and woollen-cloth manufacturers. Several of the trades which are carried on are dependent upon the woollen and worsted trade, among which are the manufactures for combs, shuttles, and machinery. The proportion of other occupations is about equal to that of similar towns.

A septennial festival is held in Bradford in honour of Bishop Blase, to whom the invention of wool-combing is attributed. The day is kept with great rejoicing and gaiety, and the procession is witnessed by thousands of strangers from the neighbouring towns and villages. The 'Leeds Mercury' for the 5th of February, 1825, contains a good account of one of these festivals. (*Hone's Every Day Book*, vol. i. pp. 209—212.)

As a seat of commerce Bradford possesses many facilities. By the Leeds and Liverpool can. it has an unimpeded communication with Hull and the German Ocean, and with Liverpool and the Irish Sea. This can. traverses much of the W. portion of the W. Riding, passing through or near Leeds, Bingley, Keighley, Skipton, and Gargrave; it enters Lancashire near Colne, and passes through Burnley, Blackburn, Chorley, and Wigan to Liverpool. By the Aire and Calder navigation, Leeds and the neighbouring towns are connected with Goole and Hull. The Leeds and Selby railway also connects the inland towns of Yorkshire with the Ouse, the Humber, and the German Ocean. The main line of the Leeds and Liverpool can. does not pass through Bradford; a branch, three m. in length, called the Bradford can., communicates between the town and that line.

The state of morals and health of the persons employed in the factory districts has often been misrepresented. In many cases the well-being of the young persons employed is strictly attended to. In Bradford and other towns of the district, instances might be given where the masters consider it an important duty to have their young workpeople morally and religiously educated. When the benefits of factory-schools are more apparent, such schools will become more numerous and effective than they have hitherto been: it may be safely affirmed that the owners of factories are generally wishful to do all in their power to promote the welfare of their workmen. On the physical results of the factory system, such works as those of Dr. Ure and Mr. Baines on the Cotton Manufacture, and that of the late Mr. Thackrah of Leeds 'On the Effects of Arts and Trades on Health,' may be consulted; from which it will appear that the evils which have been charged upon the system have resulted from the vices and follies of individuals, rather than from any baneful tendency in their employments.

Places of Worship, Education, &c.—The par. church of Bradford, dedicated to St. Peter, was erected in the reign of Henry VI., the tower being of later date; a former fabric existed, which must have been comparatively small. (Whitaker.) It is a vic. of the annual value of 440l. It has no remarkable exterior attraction, and is mentioned by Rickman as being principally of the perpendicular style of architecture. Among its monuments may be mentioned a very beautiful work by Flaxman, for a gentleman of the

name of Balme, in which old age is finely personified. Christchurch was erected in 1813; its interior is commodious, but externally it is heavy and possesses no interest. At the present time (1836) means are about to be taken to provide additional church accommodation, which is evidently needed, where the pop. is so large and increasing, and where the existing churches are so well and regularly filled. The other places of worship in Bradford are for Catholics, Independents, Baptists, Wesleyan Methodists, Primitive Methodists, Unitarians, and the Society of Friends.

The academic establishment called Airedale College, which is at Undercliffe immediately near Bradford, is for the preparation of young men for the ministry in the independent churches. This academy has been several times removed since its first establishment in 1665. Its situation previous to the site it now occupies was Idle: its present prosperity is greatly owing to the addition made to its permanent endowments by a benevolent lady of Bradford, who has also been the chief cause of the erection of the commodious buildings now occupied by the college. The number of students has varied from fifteen to twenty.

The Baptists have a college at Horton which was established in 1805. It has been aided by gifts of money and premises, subscriptions and bequests of money and books: its present income is about 900l. a year. Upwards of 100 ministers have been educated or are now pursuing their studies in this institution, ninety of whom are settled as pastors of churches in this country or abroad.

The Wesleyan Methodists have one of their seminaries for the education of the sons of ministers at Woodhouse Grove, near Bradford; it was founded in 1812, and is well to be admirably managed, and to have been found extensively useful. Its design is to 'supply the children of ministers with an education suitable to the station which their fathers hold in society.' It contains 100 pupils, and is well supported by the religious body to which it belongs. The expenditure for this school and the kindred establishment at Kingswood, near Bristol (also containing 100 pupils), has been for the last year (to June, 1835), 4122l. a little more than 20l. for each child. Of this expense 100 ministers whose sons are educated pay one-sixth. (*Report of the Schools*, for 1835; and *Wesleyan Methodist Magazine* for October, 1835.)

The grammar-school of Bradford was in existence in the time of Edward VI. By the charter of 1663 it is called 'The Free Grammar-School of Charles II. at Bradford.' The usual powers for its government are vested in 'thirteen men of the most discreet, honest, and religious persons of the neighbourhood, whereof the vicar of Bradford shall always be one.' The old school was an inconvenient building, unpleasantly situated near the churchyard. An act of parliament was obtained in 1818, which empowered the governors to dispose of lands for the erection of a new school-house, and a dwelling-house for the head master. These buildings, which were completed in 1830, are in every respect commodious, and in addition to the school-room there is a library and a porter's lodge. All boys of the par. are admissible free of expense. This school is one of those that has the privilege of sending a candidate for Lady Elizabeth Hastings's exhibitions at Queen's College, Oxford. The Archbishop of York for the time being is the visitor of the school. The present income arises from lands and buildings issuing out of freehold estates within the par. of Bradford. These estates have become so valuable that the governors of the school were enabled, some years ago, to establish a writing-school, in which a number of children receive a useful elementary education.

There are schools in Bradford on the national system of education, and on the British and foreign system; a school of industry for girls, an infant school, and many well-conducted Sunday-schools in the town or in the immediate vicinity. The Established Church has two Sunday-schools, the Wesleyan Methodists four, the Baptists four, the Independents three, and the Primitive Methodists one. We have not procured returns from all these schools, but from those which have been obtained an opinion may be formed of their efficiency, and of the high character they sustain.

	Boys.	Girls.
The Parish Church Sunday-School contains	430	470
Christchurch Sunday-School	280	330
Baptists' Sunday-Schools	490	510
Independents' Sunday-Schools	448	459
Wesleyans' Sunday-schools	800	560

The National and British Schools each require a small weekly payment from the children; their numbers are:—

	Boys	Girls
National	105	80
British	240	180

The Infants' School (including both sexes) . . . 150
School of Industry (the limited number) . . . 60

A mechanics' institute was established in 1829, which is well sustained, and has about 450 members: there is also a philosophical society. A subscription library and news-room occupy a portion of the exchange-rooms, and other apartments in this elegant building are devoted to public meetings and to periodical concerts. A library and depository of works published by the Christian Knowledge Society is attached to one of the Church Sunday-schools, and the Bible Society, the Church and other Missionary Societies have active auxiliaries. The dispensary, established in 1826, is liberally supported and well managed. A branch society to the county institution for the deaf and dumb at Doncaster furnishes considerable funds to that establishment in annual subscriptions. Bradford has several minor charities for the sick and poor, similar to those of other towns. The gas works were established in 1822; the new market, a plain and extensive building, was opened in 1824. There are two establishments for supplying the town with water; and it may be said that every comfort and convenience is accessible to the inh. The savings bank has been found very beneficial to the operatives of the district; and the Temperance Society has a large number of members. It is worthy of record that English Temperance Societies were commenced at Bradford. The town is governed by two constables, who are elected annually at a vestry meeting, and nominated by the retiring officers; one of them is for the E. and the other for the W. end of Bradford. There is a court of requests for the recovery of debts under forty shillings, and another court for the honour of Pontefract, in which debts may be sued for under five pounds. The piece hall was for many years used as a court-house for the meeting of the magistrates, and for holding the quarter-sessions. A new and ornamental building has just been completed for a court-house, which is found to be very commodious. The general aspect of Bradford is that of opulence and respectability; it is chiefly built of a fine light freestone: during the last ten years whole streets of elegant buildings have risen up, chiefly consisting of warehouses, and are an evidence of the increasing commerce and wealth of the town. The country to the N. and W. is open and picturesque, and is adorned with the residences of the more opulent merchants.

The occupations of the families in the par. of Bradford, according to the Enumeration Abstract of Population for 1831, were as follows:—

Families employed in agriculture	790
Families employed in trade, manufactures, &c.	10,913
Families not comprised in the preceding	3,346
	15,049

The t. of Bradford par.—Bowling, formerly *Bolling*, about a m. and a half S.W. of Bradford, was once the manor and residence of a family of that name. The hall is an ancient building, and was the head-quarters of the Earl of Newcastle in the year 1642 during the siege of Bradford. It was here, while in bed, after he had formed the purpose of giving up the inhabitants of Bradford to military execution, that he was dissuaded from his intention by a female apparition. It is supposed that some patriotic woman really appeared to him and remonstrated with him on his sanguinary determination, or that a dream produced the effect. *Bowling* has been mentioned as the seat of extensive ironworks.

North Bierley is about two m. S.E. from Bradford; its inh. are employed in the ironworks, the mines and quarries, and the woollen trade. The hall was the residence of Dr. Richardson, a man of refined literary taste, who gave up much time to horticultural pursuits. There is a neat episcopal chapel at North Bierley.

Eckleshill, Manningham, Allerton, Haworth, Heaton, and Clayton, are all scattered vil., at short distances from Bradford; their populations are chiefly employed in the stuff and cloth manufactures. At Manningham is the beautiful seat of E. C. Lister, Esq., one of the members for the bor. of Bradford.

Horton is the most populous and important of the smaller t.: it possesses a free-school which was founded and endowed by Christopher Scott, in the reign of Charles I. In this school 200 children are instructed. There is also another school in which sixty children of some neighbouring hamlets are instructed free. The places of worship are a small episcopal chapel, and large chapels for the Primitive and Wesleyan Methodists. The Baptist seminary is at Horton.

Shipley is three m. N. from Bradford. A church was built here in 1825, which will contain about 1500 persons there are chapels for the Baptists and Wesleyan Methodists. Worsted, woollen cloth, and paper manufactures are here carried on.

Thornton is about four and half m. W. from Bradford; it has numerous manufactures of stuffs, a church, an independent chapel, and a Methodist chapel. It has a school, erected by subscription, which contains eighty children; some of them are instructed in the classics. This school has an endowment of about 50*l.* a year, derived from various benefactions. There is also a school on the national system.

Wilden is five and a half m. N.W. of Bradford; it has a beautiful new church, an Independent chapel, and two Methodist chapels; it is a flourishing t., and, like the others in the par. of Bradford, indicates by its appearance the prosperity and activity of its pop.

Abraham Sharpe, the celebrated mathematician, and machinist, was born at Little Horton, about 1651.

Dr. Richardson was born at Bierley Hall, in 1664. He took the degree of M.D. at Oxford, but never practised. He devoted his life to literature, horticulture, and the study of antiquities. The second hot-house which was ever constructed in the N. of England was built at his house, and a cedar of Lebanon which he planted still remains there, a splendid specimen of this beautiful tree. It was sent a seedling to Dr. Richardson from Sir Hans Sloane.

John Sharp, Archbishop of York, was born at Bradford in 1644; he was a man of great eloquence, of sincere piety, and of general abilities. He died in 1718, and was buried in York minster, where an elegant monument was raised to his memory.

(Whitaker's *Loidis in Elmete*; Baines's *History and Directory of Yorkshire*; Bigland's *Yorkshire*; Parsons' *Leeds and the adjoining Towns*; Scatcherd's *Morley, Communications from Bradford*.)

BRADLEY, JAMES, the third Astronomer Royal, and the first, perhaps, of all astronomers in the union of theoretical sagacity with practical excellence, was born at Sherbourn in Gloucestershire (probably in March, 1692-3). For all authorities, &c., we must refer the reader to the excellent and minute account of him in the Oxford edition of his 'Miscellaneous Works and Correspondence,' Oxford, 1832, by Professor Rigaud.

His father, William Bradley, married Jane, the sister of the Rev. James Pound, known by the observations of the comet of 1680 which he supplied to Newton, together with other observations referred to in the *Principia*. With this uncle James Bradley passed much of his time, and found in his house the means of applying himself to astronomical observation. As early as 1716 there is a letter of Halley to Pound mentioning Bradley as an observer; and in 1718 and 1719, we find some observations of double stars (Castor and γ Virginis), which have since been used by Sir J. Herschel in his determination of the orbits which each of the pairs just mentioned describes round the other (*Mem. R. Astron. Soc.* vol. v. pp. 195, 202). At the same time he turned his attention to the motions of Jupiter's satellites, and detected, by observation, the greater part of the inequalities afterwards discussed by Bailli. Tables of the satellites, from Bradley's observations, were published in Halley's collection, London, 1749, and in *Phil. Trans.* vol. xxx.

Bradley was entered of Balliol College, Oxford, in 1710, and took the degrees of B. A. and M. A. in 1714 and 1717. In 1718 he became a fellow of the Royal Society. In 1719 he was ordained to the rectory of Bristow, in Monmouthshire. In 1720 he obtained another living, but in 1721 resigned his preferments on obtaining the Savilian Professorship of Astronomy at Oxford, with the holding of which they are incompatible. He also resigned the office of chaplain to Bishop Hoadly. We find him now engaged in miscellaneous observation, particularly with the long telescope introduced by НУТОНЪМЪ. With one of these of 212 ft. focal length, he measured the diameter of Venus in

1722. Pound died in 1724, and in the next year Bradley began the observations which led to his great discovery.

The circumstances connected with the discovery of **ABERRATION** are already described. The scene of the first observations was at the house of Mr. Molyneux at Kew, which afterwards became the palace of that name, lately pulled down, a memorial inscription of the discovery having been placed there by William IV. The associated observations of Bradley and Molyneux detected the motion of γ Draconis, and other stars, and established approximately the law of the motion of the first. That the motion in declination depended in some way or other on the latitude of the star was evident, and in this state the matter stood, when Bradley in 1727 erected a zenith sector for himself at Wanstead. The original entry of the first night's observation at Kew, which confirmed the fact of an unexplained motion in γ Draconis (Dec. 21, 1725), is preserved in Bradley's own hand-writing. The following, written on a torn bit of paper, is the earliest of the observed phenomena which led to the greatest discovery of a man who has, more than any other, contributed to render a *single observation* of a star correct enough for the purposes of astronomy:—

Dec 21st Tuesday 5^h 40' sider. time
Adjusted y^e mark to y^e Plumb Line
& then y^e Index stood at 8
5^h 48' 22" y^e star entred
49 52½ Star at y^e Cross
51 24 Star went out
s
s could

At soon as I let go y^e course
screw I perceived y^e Star too
much to y^e right hand &
so it continued till it passed
y^e Cross thread and within a quarter

was
of a minute after it had passed
graduat

I turned y^e fine screw till I saw
y^e light of y^e star perfectly
bissected, and after y^e obser-
vation I found y^e index
at 11½. so that by this
observation y^e
mark is about 3¾
too much south.
but adjusting
y^e mark and plumbline

I found y^e Index at 8½

Bradley began his observations at Wanstead with a better instrument than that at Kew, and capable of taking in a larger range of the heavens. He soon confirmed the general fact which he had observed, and it only remained to assign the cause. There is traditional evidence to the following anecdote, first given by Dr. Thomson in his History of the Royal Society, and adopted by Professor Rigaud:—'When he despaired of being able to account for the phenomena which he had observed, a satisfactory explanation of it occurred to him all at once when he was not in search of it. He accompanied a pleasure party in a sail upon the river Thames. The boat in which they were was provided with a mast which had a vane upon the top of it. It blew a moderate wind, and the party sailed up and down the river for a considerable time. Dr. Bradley remarked, that every time the boat put about, the vane at the top of the boat's mast shifted a little, as if there had been a slight change in the direction of the wind. He observed this three or four times without speaking; at last he mentioned it to the sailors, and expressed his surprise that the wind should shift so regularly every time they put about. The sailors told him that the wind had not shifted, but that the apparent change was owing to the change in the direction of the boat, and assured him that the same thing invariably happened in all cases.' By tracing this phenomenon to its cause, namely, the combined motion of the boat and the wind, he was enabled to give the solution of the star's motion, namely, a small change of place arising from the spectator giving to the ray of light the effects of his own motion, as explained in the article **ABERRATION**.

Since we wrote the above, we have found what leaves us at liberty to say that Dr. Robison is the authority for the preceding account, who was old enough to have possibly heard it from one of Bradley's contemporaries. He (Dr. Robison) has given the anecdote himself in a part of his

Mechanical Philosophy, where we should certainly not have gone to look for it, nor, we imagine, would Professor Rigaud: namely, in the chapter on *Seamanship*, vol. iv. p. 629. His story is as follows:—'The celebrated astronomer Dr. Bradley, taking the amusement of sailing in a pinnace on the river Thames, observed this "the phenomenon above described," and was surprised at it, imagining that the change of wind was owing to the approaching to or retiring from the shore. The boatmen told him that it always happened at sea, and explained it to him in the best manner they were able. The explanation struck him, and set him a musing on an astronomical phenomenon which he had been puzzled by for some years.' This account differs in some material points from that of Dr. Thomson, and is not given by Dr. Robison in terms which imply that he considered himself as the authority. Perhaps further evidence may be obtainable.

Upon this discovery, several observations must be made, relative to its importance in astronomy. It is the first positively direct and unanswerable proof of the earth's motion. In the next place, the explanation given was not purely an hypothetical one, or one which would allow of any velocity being attributed to light which would best answer to observed phenomena, but required that the velocity already measured by Römer's observations of the retardation of the eclipses of Jupiter's satellites should be the sufficient reason for the annual oscillations of the fixed stars. A very simple geometrical analysis of the problem shows that when the angle of aberration is greatest, its sine must be the quotient of *the earth's velocity* divided by the *velocity* of light. Taking the first at 18 miles per second, depending upon the correctness of the measurement of the earth's orbit and of the length of the year, and the second at 200,000 miles per second, which depends upon a third and distinct phenomenon, namely, the observations of the time of eclipses of Jupiter's satellites at different periods of the year, we find *a priori*, that the sine of the greatest angle of aberration, if aberration there be, must be .00009, which is the sine of 1½ seconds nearly, and has been made in round numbers. The greatest aberration from the mean place observed by Bradley was 20 seconds and two-tenths, in which the most correct modern observations, in masses of thousands at a time, have not shown an error of more than three-tenths of a second. This is one of the reasons why we have said that, in the union of theoretical sagacity with practical excellence, Bradley stands unrivalled. Newton, Laplace, &c. were not observers. Flamsteed, Cassini, &c. were not great theorists. Halley, who of all the men of Bradley's time, united the largest knowledge of both, was so far from being the equal of Bradley in minuteness of observation, that he constantly declared his suspicion of the impossibility of detecting a part of a second. Kepler was skilful in the detection of the laws which phenomena follow, but not in that of physical causes. In our opinion, Hipparchus is (difference of circumstances considered) the prototype of Bradley. The time of the discovery of the *cause* of aberration was probably about September, 1728 (Correct Astronomy, vol. ii. p. 535, where it might be inferred that both the phenomenon and the cause were discovered in the same year), and was communicated immediately to the Royal Society (*Phil. Trans.* No. 406, vol. xxxv, p. 637). In 1728 Bradley began lectures at Oxford, and in 1732 removed his residence to that University. We pass over the various labours by which he sustained the character of the 'best astronomer in Europe,' given to him by Newton, and proceed to the year 1742, when he was appointed astronomer royal. This was almost the last act of Sir Robert Walpole's administration, who, as Professor Rigaud has well observed, 'appears to have determined that one of the first points he would secure before his retirement was the nomination of a question: he declared his intention of resigning in the House of Commons on the 2nd of February, and Bradley's appointment was dated the 3rd.' From this time to 1747 he was engaged (among other things) in the career of observation which led to his second great discovery of *aberration*, communicated in that year (*Phil. Trans.* No. 407, vol. xlv. p. 1). The phenomenon in its most simple state may be thus represented: the earth's axis, instead of describing a cone, describes a *fluted* cone; or, the pole of the equator, instead of moving uniformly round the pole of the ecliptic in a small circle, describes a wavy or undulating curve with a milled edge, if we may so speak, with about 1400 undulations in a complete revolution. The merit of

Bradley consists, firstly, in his determination of so small a quantity, since the greatest effect of nutation is only half that of aberration, and distributed through 19 years instead of one; secondly, in his discovery of the circumstance on which it depends, namely, the position of the moon's orbit with respect to the equator. This orbit shifts the position of its nodes gradually, making them complete a revolution in about 18½ years. This was also found to be the period in which the pole of the equator describes one of the waves above mentioned, and subsequent investigation has confirmed the dependence of the greater part of the nutation on the motion of the moon's node, by showing the former to be a consequence of the non-sphericity of the earth, and of the moon's attraction on the protuberant parts. [NUTATION.]

There is a third investigation of Bradley which stands out from the rest, and displays considerable mathematical sagacity: we refer to his empirical formula for the law of refraction. He was assisted in the necessary computations by Maskelyne, who first appeared before the world as the pupil of Bradley. In this very delicate research, the latter had again gone beyond his contemporaries in the evaluation of minute quantities. His table is even yet very good for the first forty-five degrees of zenith distance; and his determination of the latitude of Greenwich (an investigation depending for its accuracy upon that of the tables of refraction) does not differ more than half a second from that deduced by Mr. Pond from 720 observations with both the mural circles.

In 1751 the alteration of the style took place, and Bradley appears to have had some share in drawing up the necessary tables, as well as in aiding Lord Macclesfield, his early friend, and the seconder of the measure in the House of Lords, and Mr. Pelham, then minister, with his advice on the subject. But this procured him some unpopularity, for the common people of all ranks imagined that the alteration was equivalent to robbing them of eleven days of their natural lives, and called Bradley's subsequent illness and decline a judgment of heaven. This was, as far as we know, the last expiring manifestation of a belief in the wickedness of altering the time of religious anniversaries which had disturbed the world, more or less, and at different periods, for 1400 years. In the same year Bradley obtained a pension of 250*l.* from the crown. From that time he continued his observations, of which we shall presently speak, till the 1st of Sept. 1761, in the observations of which date his handwriting occurs for the last time in the Greenwich registers. He then retired among his wife's relations at Chalford in Gloucestershire, where he died July 13, 1762, and was buried at Minchinhampton. His health had been failing for some years, though he was originally of a strong constitution, and always of temperate habits. His wife died before him in 1757, and he left one daughter, but his line is now extinct.

Thus far we have obtained our materials for facts from the life by professor Rigaud, above cited. This account does not mention the subsequent history of the manuscript observations made at the observatory of Greenwich, nor does the life in Kippis's *Biographia Britannica*. The following is Dr. Maskelyne's account (Answer to Mudge's *Narrative*, &c. Lond. 1792):—'Dr. Bradley's valuable observations were made in the course of twenty years from 1742 to 1762, and consist of thirteen volumes in folio. They were removed from the Royal Observatory, before I was appointed to the care of it, by the doctor's executors, who thought proper to consider them as private property; and during a suit instituted on the part of the crown, in the Exchequer, to recover them, they were presented in 1776 to Lord North, now Earl of Guilford, Chancellor of the University of Oxford, and by him presented to the University, on condition of their printing and publishing them. The University put them immediately for that purpose into the hands of Dr. Hornsby, Savilian professor, &c., whose bad state of health has been alleged as the cause of the delay of the publication.' The account of Dr. Hornsby, in the preface of the publication in question, differs from the preceding in an important particular. The above would allow us to infer that the University of Oxford accepted a donation the right to make which was under litigation, with a strong *prima facie* case against it. Now Dr. Hornsby mentions, 1. What is very well known, that both the predecessors of Bradley, Flamsteed and Halley, were allowed to consider their own observations as their own property; that the former printed, and his executors published, his observations as

private property, and that the daughter of the latter received compensation for relinquishing her right to her father's papers; 2. That a salaried office of only 100*l.* a year, with the duty of improving as much as possible the planetary tables, and the method of finding the longitude, by no means implied an obligation to consider the actual observations made as the property of the government; and 3. That the Royal Society having first made and abandoned a claim, the government instituted its suit in 1767, and abandoned it in 1776, before the observations were presented, not to Lord North personally, but in trust for the University of which he was chancellor. Dr. Maskelyne wrote under feelings of pique at being refused the sheets of the observations as fast as they were printed; this, though it would have been, under ordinary circumstances, a churlish proceeding, might perhaps have been advisable in regard to the officer of a government that had pretended a claim to the property of the work, which, though dormant at the time, the University could not know to have been formally abandoned. And it has been suggested to us, that there is no method of *abandoning* a suit in the Exchequer, as a practical relinquishment of proceedings is no bar in that court to their revival at any future time. The observations in question were published at Oxford in two volumes; the first in 1798, under the superintendance of Dr. Hornsby; the second in 1805, under that of Dr. Abraham Robertson. They go from 1750 to 1762, and are about 60,000 in number.

But these observations might have remained a useless mass, except for occasional reference, to this day, had it not been for the energy of a distinguished German astronomer, Frederick William Bessel, who at Lilienthal and Königsberg successively, and from 1807 to 1818, added to other laborious occupations the enormous task of reducing and drawing conclusions from all Bradley's observations, published in the latter place and year under the title of *Fundamenta Astronomiæ pro anno 1755, deducta ex observationibus viri incomparabilis James Bradley*. 'This work has always been considered one of the most valuable contributions to our astronomy. It exhibits the result of all Bradley's observations of stars, reduced on a uniform system, and is always referred to by succeeding astronomers as the representative of Bradley's observations.' (Professor Airy, *Rep. Brit. Ass.* vol. i. p. 137.)

It may be said that Bradley changed the face of astronomy. The discoveries of aberration and nutation, and the improvement of the tables of refraction, the attention to minute observation, and the tact with which every instrument was applied to the purposes for which it was best adapted, were so many great steps both in the art and science. Before his time every instrumental improvement was a new cause of confusion, by pointing out irregularities which seemed to baffle all attempts both at finding laws and causes. Nevertheless, the name of Bradley hardly appears in popular works, nor will do so until the state of astronomy is better understood. Let any man set up for the founder of a sect, and begin by asserting that he has found out the cause of attraction, or the structure of the moon; let him exalt himself in the daily papers, and he must be unfortunate indeed if in three years he is not more widely known in this country than its own Bradley, one of the first astronomers of any.

BRADSHAW, JOHN, president of the court which tried Charles I. Bradshaw was of a good family in Cheshire. His mother was a daughter and coheir of Ralf Winnington of Offerton. Noble and Chalmers state that the place of his education is not recorded. But his will establishes this, for he makes legacies to certain schools at which he says he had received his education. He was a student of law in Gray's Inn. He had considerable chamber practice, especially among the partisans of the parliament, and he is admitted by his enemies to have been not without ability and legal knowledge. (Clarendon.)

In October, 1644, he was employed by the parliament, in conjunction with Prynne and Nudigate, to prosecute Lords Macquire and Maemahon, the Irish rebels. In October, 1646, by a vote of the House of Commons, in which the peers were desired to acquiesce, he was appointed one of the three commissioners of the great seal for six months; and in February following, by a vote of both houses, chief justice of Chester. In June, 1647, he was named by the parliament one of the counsel to prosecute the royalist Judge Jenkins. October 12, 1648, by order of the parliament, he received the degree of serjeant.

On January the 1st, 1648-9, it was adjudged by the Commons that by the fundamental laws of the land, it is treason in the king of England for the time being to levy war against the parliament and kingdom. On the 4th an ordinance was passed for erecting a high court of justice for trial of the king. The commissioners for the trial of the king elected Serjeant Bradshaw their president. Lord Clarendon says that at first he seemed much surprised and very resolute to refuse it. The offer and the acceptance of it are strong evidence of Bradshaw's courage and the staunchness of his republicanism.

The court ordered, 'that John Bradshaw, Serjeant-at-Law, who is appointed president of this court, should be called by the name, and have the title of Lord President, and that as well within as without the said court, during the commission and sitting of the said court.' The deanery house in Westminster was given him as a residence for himself and his posterity; and the sum of 5000*l.* allowed him to procure an equipage suitable to the dignity of his office. The parliament further settled 4000*l.* a-year upon him and his heirs, in landed property. He was also made Chancellor of the Duchy of Lancaster. He had previously been appointed Chief Justice of Wales and of Chester, besides being Lord President of the Council of State. The accumulation of so many offices in one man certainly looks something like pluralism in the Commonwealth: and unless great allowance be made on account of the dignity of the work done, the remuneration must appear somewhat disproportioned to the quantity of it.

When Cromwell seized the government, Bradshaw was one of those who offered all the opposition in their power, and never went over to him. Bradshaw's conduct, in courage and firmness, almost equalled Ludlow's. His bold answer to Cromwell, when he came to dissolve the council, is well known. When Cromwell insisted upon every one's taking out a commission from himself, if they chose to retain their places under his government, Bradshaw absolutely refused, alleging that he had received his commission as Chief Justice of Chester, to continue *quamdiu se bene gesserit*, and he should retain it without any other, unless he could be proved to have justly forfeited it by want of integrity; and if there were any doubts upon it, he should submit it to trial by twelve Englishmen. He soon after set out on the circuit, without waiting further orders; nor did Oliver think it prudent to prevent or recal him, as he had said nothing but force should make him desist from his duty.

It was not to be expected that such conduct would find much favour in the eyes of Cromwell. He attempted to oppose his election for Cheshire; and though Bradshaw was returned by the sheriff, as others in the Cromwellian interest returned another, neither sat, it having been so decided in the case of double returns. Bradshaw's power and popularity must have been very considerable; for, notwithstanding his having been engaged in several designs against the power of Cromwell, one of which was connected with the Fifth Monarchy-men, who were to destroy and pull down Babylon, and bind kings in chains and nobles in fetters of iron, his highness did not dare to seize him, but continued to watch and defeat his designs with his characteristic policy. Bradshaw however was deprived of his office of Chief Justice of Chester. The two former friends watched each other with the vigilance of two crouching tigers, each waiting for the exact moment to make the decisive spring that was to destroy the other. And we may give some credit to the observation of certain of the royalist writers, that Bradshaw would have had no objection to perform for Oliver, the hereditary tyrant, the same office he had performed for Charles, the hereditary one; and that he would not have been sorry to have had an opportunity to convince the world that he was no respecter of persons.

On the death of Oliver, and the abdication of his son Richard, Bradshaw obtained a seat in the Council of State, was elected Lord President, and appointed a Commissioner of the Great Seal; but his health, which had been some time declining, became so precarious that he was unable to perform the duties of that office.

The last act of Bradshaw's life was consistent with the free and brave spirit which he had always shown. The army had again put a force upon the House of Commons, by seizing the Speaker, Lenthall, on his way thither, and thereby suspending all further proceedings of the existing government. The almost expiring but unsubdued spirit of Bradshaw felt the insult. He repaired to the Council of

State, which sat that day; and when Colonel Sydenham, one of the members of the council, endeavoured to justify the army in what they had done, and concluded his speech by saying, according to the cant of the day, that they were necessitated to make use of this last remedy by 'particular call of the Divine Providence: 'weak and extenuated as he was, says Ludlow, 'yet animated by his ardent zeal, and constant affection to the common cause, he stood up, and interrupting him, declared his abhorrence of that detestable action, and telling the council, that being now going to his God, he had not patience to sit there to hear his great name so openly blasphemed.' He then abruptly left the council, and withdrew from public employment. He survived this but a few days, dying November 22nd, 1659, of a quartan ague, which had lasted a year. 'A stout man,' says Whitelock, 'and learned in his profession: no friend to monarchy. He declared, a little before his death, that 'if the king were to be tried and condemned again, he would be the first man that should do it.' He was buried with great pomp in Westminster Abbey, whence his body was dragged at the restoration, to be exposed upon a gibbet, with those of Cromwell and Ireton.

The leading feature in Bradshaw's life—that which makes his name the property of history—was his acting as presiding judge in the trial of the king; a transaction, in the words of Hume, 'the pomp and dignity, the ceremony of which corresponded to the greatest conception that is suggested in the annals of human kind;—the delegates of a great people sitting in judgment upon their supreme magistrate, and trying him for his misgovernment and breach of trust.' How did he conduct himself on this occasion? With the mixture of dignity, firmness, moderation, and humanity, which befitted his high office? or, as asserted by Clarendon, 'with all the pride, impudence, and superciliousness imaginable?' Did he, in the words of Noble, behave to 'fallen majesty with a rudeness that those who preside in our criminal courts never use to the lowest culprit?† What was the fact? Charles having repeatedly refused to acknowledge the authority of the court, Bradshaw addressed him thus:—'Sir, this is the third time that you have publicly disowned the court, and put an affront upon it; but truly, Sir, men's intentions ought to be known by their actions; you have written your meaning in bloody characters throughout the kingdom.' Ludlow says, that to Charles's repeated assertions that he was responsible only to God, Bradshaw answered, that 'see what God had, by his providence, overruled that plea, the court was determined to do so likewise.' Bradshaw, on giving sentence, resorted to precedent. He instanced the cases of many kings who had been deposed and imprisoned, and their subjects, particularly in Charles's native country, where, out of a hundred and nine, the greater part had either been dethroned, or proceeded against for misgovernment; and even the prisoner's own grandmother removed, and his father, while an infant, crowned in her stead. (Richard's worth, vii., 1396.; Whitelock, p. 376; Ludlow, Hutchinson, Clarendon, &c.)

His will, which is dated March 22, 1653, contains several remarkable facts. He directs his brother Henry to sever 700*l.* in purchasing an annuity for maintaining a free school at Marple, 500*l.* for increasing the wages of the master of Bunbury school, and 500*l.* to increase the wages of the master and usher of Middleton school. There are two codicils to the will; and by one dated September 10, 1653, he gives 10*l.* to John Milton. The will was proved December 16, 1659. (Ormerod's *Cheshire*, vol. iii. p. 409; and the character of him by Milton, in the *Defensio Secunda pro Republica Anglicana*.)

BRADY, NICOLAS, a divine whose name is known chiefly in connexion with that of Nathan Tate, his versifying collaborator in producing the new version of the Psalms of David, which has since become generally used in the Church of England, in the place of the obsolete version made in the reign of Edward VI. by Sternhold and Hopkins. Brady was the son of an officer in the royalist army during the civil war in 1641, and was born October 28, 1659, at Bandon, a town of Ireland, in the county of Cork. At the age of twelve he was sent to Westminster school, whence he proceeded to the college

* Supreme magistrate is a contradiction in terms; supreme being applicable only to the sovereign, and magistrate a name for a subject. It is though he professed to write on government, never seems to have understood the meaning of sovereignty, though Hobbes had made it sufficiently clear.
† Lives of the Regicides, I. 68.

of Christ-Church, Oxford. He subsequently graduated at Trinity College, Dublin; which, in testimony of his zeal and assiduity in the Protestant cause, conferred upon him gratuitously, during his absence in England, the degree of D.D. He was appointed chaplain to Bishop Wettenhall, by whose patronage he obtained a prebend in the cathedral of Cork. At the time of the Revolution he made himself conspicuous among the most active partisans of the Prince of Orange, and on three occasions prevented the execution of King James's orders to destroy with fire and sword the town of Bandon, his native place. On the establishment of the new dynasty of William and Mary, he was deputed by his fellow townsmen to present to the English parliament a petition for redress of the grievances which they had suffered under James; and remaining in London, he became minister of the church of St. Catherine Cree, and lecturer of St. Michael's in Wood-street. He was afterwards appointed chaplain, first to the Duke of Ormond, then to King William and Queen Mary. He held also the office of minister at Richmond in Surrey, and at Stratford-on-Avon in Warwickshire. From his several appointments alone he derived at least 600*l.* a year; but being a bad economist, he was obliged, for the purpose of increasing his income, to undertake the keeping of a school at Richmond. He died at the age of sixty-six, on the 20th of May, 1726: the same year in which he published by subscription his 'Translation of the *Æneids* of Virgil,' in 4 vols., 8vo., which is now almost entirely unknown. Among several of his smaller productions is a tragedy, entitled 'The Rape, or the Innocent Impostors.' He published at different times three volumes of his sermons, of which three additional volumes were published after his death by his son; but the reputation of Dr. Brady rests solely upon his share in the new metrical version of the Psalms; of the merits of which every one who possesses a Prayer Book may judge for himself.

BRA'DYPUS. [A1 and SLOTH.]

BRA'GA, a comarca of Portugal, situated almost in the centre of the prov. of Entre-Duero e Minho, and surrounded by the districts of Barcellos, Viana, Valença, Amarante, and Guimaraens. The territory, though very mountainous, contains some fertile valleys, which being sheltered from the northern winds, enjoy a high degree of temperature. It is watered by the riva. Cavado and Deste, or Este. The former of these streams rises in the Serra de Gerez, N.E. of the capital of the comarca, and flowing S.W. empties itself into the sea near Espoende; the latter has its source E. of the same capital, and flowing in a direction nearly parallel to the former, enters the ocean near Villa-do-Conde. The productions of the soil are the same as in the rest of the prov. The whole district comprises one city, one town, and 101 par., containing a pop. of 49,838 inh. The chief occupations of the people are agriculture and the manufacture of hats and hardware.

BRAGA, the Braccara Augusta of the Romans, the capital of the comarca, is one of the most ancient cities in Portugal, and was the capital of the kingdom when the Suevians were masters of it. It is now the seat of an archbishop, who is the primate of Portugal. Until recently ruins of a Roman amphitheatre and an aqueduct existed; but at present no remains of its ancient grandeur are found, except some coins, and five milestones belonging to the five Roman roads leading into Braga, which one of the archbishops removed to a square in the S. part of the city.

The town is situated on an eminence in a fertile valley, watered by the riv. Deste on the S. and by the Cavado on the N., and is about 15 m. from the sea. This valley is covered with quintas or country-houses, and planted with oak, vine, orange, and other fruit trees. The oranges of Braga are the best in Portugal. About 3 m. E. of the city stands a lofty hill, commanding a delightful view of all the plain, on the summit of which is built the renowned sanctuary of Jesus do Monte.

The city itself contains nothing remarkable. The streets are very narrow and irregularly laid out. There are two squares, and a great number of fountains. The principal building is the cathedral, a stately fabric of the old perpendicular style, which was rebuilt by Count Henrique, the first king of Portugal. The pop. of Braga is reckoned at 19,097. 41° 33' N. lat., 8° 23' W. long.

BRAGANÇA, a comarca of Portugal, in the prov. of Tras-os-Montes, and in its northern extremity. It is surrounded by the Spanish provinces of Leon and Galicia, and by the Portuguese comarcas of Chaves, Mirandela,

and Mencionvo. The territory is very mountainous, being crossed in every direction by the ramifications of the serras of Gerez, Canda, and Padornelo. There are notwithstanding many valleys, in which rich crops of grain and fruit are raised. The district is irrigated by a number of large streams, all of which flow generally from N. to S., and are affluents of the Duero. The district contains 88,896 inh. distributed in 1 city, 10 towns, and 274 par.

BRAGANÇA, Brigantium, the capital of the district, is situated in a very agreeable and fertile plain on the Tervenza, an affluent of the Sabor; it was erected into a duchy by Alonso V. in 1442, the eighth possessor of which, John II., was raised to the throne of Portugal in 1640, under the title of John IV. From that king the present royal family of Portugal is descended. The town was formerly a fortified place, and now contains a castle almost in ruins. It has nothing remarkable except one large square in the castle, two out of it, and a spacious plain where the nobility and gentry of the place hold their races and other amusements of chivalrous origin. Pop. 3373; 41° 51' N. lat.; 6° 40' W. long.

BRAGANÇA, HOUSE OF, is the original title of the reigning dynasty of the kingdom of Portugal. The origin of the Bragança family dates from the beginning of the fifteenth century, when Affonso, a natural son of King João, or John I., was created by his father duke of Bragança and lord of Guimaraens. Affonso married Beatrix, the daughter and heiress of Nuno Alvarez Pereira, count of Barcellos and Ourem. From this marriage the line of the dukes of Bragança, marquises of Villavieosa, &c., has sprung. By the fundamental laws of the Portuguese monarchy, passed in the Cortes of Lamego in 1139, all foreign princes are excluded from the succession, and the consequence has been that, in default of legitimate heirs, the illegitimate issue of the royal blood has been repeatedly called to the throne. When the line of the Portuguese kings became extinct by the death of King Sebastian in Africa, 1578, and by that of his successor Cardinal Henrique, 1580, both dying without issue, Antonio Prior of Crato, and natural son of the Infante Dom Luiz, Henrique's brother, claimed the succession, but Philip II. of Spain, whose mother was a Portuguese princess, urged his own pretensions to the crown of Portugal in despite of the laws of Lamego, and he enforced his claim by means of an army commanded by the duke of Alba. [ANTONIO; ALBA.] The Portuguese submitted, Antonio died an exile, and Philip and his successors on the throne of Spain continued to hold the crown of Portugal also till 1640, when the Portuguese, weary of the Spanish yoke, revolted and proclaimed Dom João, the then duke of Bragança, their king, he being the next remaining heir to the crown. He assumed the title of João IV., and was styled 'the fortunate.' The crown of Portugal has continued in his line ever since. John IV. was succeeded by his son Affonso Henrique, who, being dethroned in 1668 for his misconduct, his brother Pedro assumed the crown. Pedro was succeeded in 1706 by his son João V., who, dying in 1750, the crown devolved upon his son Joseph I. Joseph was succeeded in 1777 by his daughter Donna Maria I., who afterwards becoming insane, her son Dom João was made prince regent in 1792, and at the death of his mother in 1816 he assumed the title of King João VI. He married a Spanish princess, by whom he had two sons, Pedro and Miguel, and several daughters. In 1822 his eldest son Pedro was proclaimed Constitutional Emperor of Brazil, which became thereby independent of Portugal. In 1826 King John VI. died at Lisbon, and his son Dom Pedro being considered as a foreign sovereign, Dom Pedro's infant daughter Donna Maria II. was proclaimed queen of Portugal. Dom Pedro died in September, 1834, at Lisbon. His son Pedro II. is now (1835) emperor of Brazil.

BRAHE, TYCHO. The influence which the labours of this great reviver of correct astronomy exercised upon the sciences of his own and succeeding ages, would justify a more minute detail of his life than we can here give. It will be convenient to place all references at the beginning of this article, which we shall accordingly do. (See also general references in ASTRONOMY.)

The life of Tycho Brahe was written by Gassendi; first edition, Parisii, 1654, with copperplate crown in the title-page; second edition with two title-pages, both 'Hagæ Comitum,' the first, 1665, marked 'Editio secunda auctior et correctior,' the second, 1664, without any mark of second edition, and with an empty space for the crown. The two editions are

not appear different in matter. Both contain the 'Oratio Funebris, &c. of John Jessenius. See also Teissier, 'Eloges des Hommes savans,' iv. 383; Blount 'Censura,' &c.; 'Epistolæ ad Johannem Keplerum,' &c., 1718; Riccioli, 'Chronicon in Almagesto Novo,' v. i. p. 46. For modern accounts of his astronomy see Delambre 'Ast. Mod. ;' and in English the chapter on Tycho Brahé and Kepler in Narrien's 'Account of the Progress of Astronomy,' Baldwin, 1833. The life in the 'Biog. Univ.' is by Malte-Brun. The writings of Tycho Brahé are as follows. The capitals serve to separate different works.

(A) 'De Novâ Stellâ,' anno 1572, &c.; 'Hafniæ' (Copenhagen), 1573. Extremely scarce, afterwards inserted in the 'Progymnasmatâ: English translation, 1582 (copy in the Bodleian, Hyde, cited by Lalande). (B) 'De Mundi Æthere recentioribus Phenomenis liber secundus, qui est de Illustri Stellâ Caudatâ anno 1577, conspecta 1588?' Is Lalande correct, 'Bibl.' 119? We have a copy answering in all respects to his description, but with title marked Prague, 1603; we cannot find 1588 at the end, as he says. The statement in the preface is not the same as he gives, but the point is of little importance. (C) 'Apologetica Responso,' &c., Uraniburg, 1591, an answer to an unknown opponent on the parallax of comets. (D) 'Epistolarum astronomica-rum libri,' Uraniburg, 1596; some have on the title-page Frankfort, 1610, others Nuremberg, 1601. (E) 'Astronomiæ Instauratæ Mechanica, Wandesburg, 1598, reprint, Nuremberg, 1602; plates only reprinted in Mem. Acad. Sci., 1763. (F) Astronomiæ Instauratæ Progymnasmatâ,' begun at Uraniburg, finished at Prague, 1601 (in the title-page) published posthumously: the executor's preface is dated 1602. It contains the great mass of Tycho Brahé's results of observation, though headed from beginning to end 'De Novâ Stellâ, anni 1572.' The treatise (B) with title-page, Prague, 1603, is always called and sold as the second volume of these 'Progymnasmatâ,' and though it treats of various other matters is headed throughout as 'De Cometâ anni 1577.' And (D) is very often made a third volume. The same works (all three), with alteration of title-page only, Frankfort, 1610. (G) In the 'Cœli et Siderum, &c. Observationes,' &c., Leyden, 1618, are two years' Bohemian Observations of Tycho Brahé. (H) 'De Disciplinis mathematicis Oratio in qua Astrologia defenditur,' an academical lecture of 1574, printed, not by Tycho, but by Curtius, Hamburg, 1621. (I) 'Geistreiche Weissagung,' &c., 1632; translation of (A) with the astrological part, omitted in (F), date 1632, no place mentioned by Lalande. (K) 'Opera Omnia,' Frankfort, 1648, reprint of the two first in (F). (L) Lucii Barretti 'Sylloge Ferdinandeâ,' Vienna, 1657, contains Tycho's observations, 1582-1601. (M) 'Historia Cœlestis,' Augsburg, 1666, by this same Barrettus, contains all Tycho's observations. Other title-pages 'Aug. Vind., 1668, Ratisb., 1672, Diling., 1675. Errors pointed out in Bartholinus 'Specimen recognitionis,' &c., Copenhagen, 1668. (N) Kepler, 'Tabulæ Rudolphinæ,' Ulm, 1627. These are the final tables deduced from all Tycho's observations. There is either an original life of Tycho, or a translation of Gassendi, in Danish, translated into German by Weistriss, Leipzig, 1756. Tycho Brahé printed his works at his own press of Uraniburg, so long as he remained there, and probably distributed them principally in presents. When they became dispersed, the booksellers varied the title-pages, and hence all the confusion of the preceding list. We suppose those marked (F) were put together after the Frankfort reprint (K), to look like them, if indeed that be a reprint.

The family of Brahé was originally Swedish, but Tycho, the grandfather of the astronomer, and Otto his father, belonged to a branch which had settled in Denmark. Tycho Brahé himself was the eldest son and second child of his father, and was born at Knudsthorp, near the Baltic (lat. 56° 46' N., according to Gassendi), on the 14th of December, 1546. His father had ten children, of whom the last, Sophia Brahé, was known in her day as a Latin poetess, and was also a mathematician and astrologer. This family was as noble and as ignorant as sixteen undisputed quarterings could make them; but Steno, the maternal uncle of Tycho, volunteered to take charge of him. Perceiving that he had talent, his uncle employed masters to teach him Latin, much against the will of his father, who intended him to do nothing but bear arms. In 1559 Tycho was sent to the University of Copenhagen, where his attention was called to astronomy by the pretensions of the astrologers, and by the total eclipse of the sun, August 21, 1560. He began to study the doctrine

of the sphere, and the ephemerides of Stadius. In 1562 his uncle, who intended him for the law, sent him to Leipzig with a tutor. But he would attend no more to that science than just enough to save appearances; he disliked the study, and made a punning epigram on it as follows:—

'Jus patinæ et legum sunt nomine jura sub uno,
Grandia condunt et grandia jura vorant.'

In the meanwhile he spent his time and money on astronomical instruments; and, while his tutor slept, used to watch the constellations by aid of a small globe not bigger than his fist. With these slender means he was able to see that both the Alphonsine and Prutenic tables gave the places of the planets visibly wrong, and particularly so in the case of a predicted conjunction of Saturn and Jupiter in 1563. He took strongly into his head the correction of these tables, and his first instrument was a pair of common compasses, which he used as an instrument for observing the angles between stars. By drawing a circle with the same radius as the leg of the compasses, and laying down angles upon it, he was able to find the Alphonsine tables more than a month in error, and the Prutenic several days. He procured a better instrument, and corrected the deficiencies of its graduation by a table. This instrument was a parallactic rule, or radius, in the manner of Gemma Frisius.

He was recalled in 1665, by the death of an uncle, and soon became disgusted by the contempt with which his equals and associates spoke of all liberal knowledge. His uncle Steno, however, recommended him to follow his favourite pursuit, and he left his country once more, and took up his residence at Wittenberg in 1666, from whence he was driven to Rostock in the autumn by the plague. While in this place, a quarrel arose between him and one Pasherr, a Dane of family like himself, at a public festival. The affair was decided by single combat, and Tycho lost all the front part of his nose. A contemporary, cited by Gassendi, hints that they took this method of settling which was the better mathematician of the two. Tycho always afterwards wore an artificial nose made of gold, but so well formed and coloured as to be hardly distinguishable from the one with which he began life; and he always carried a small box of ointment, with which to anoint this artificial member.

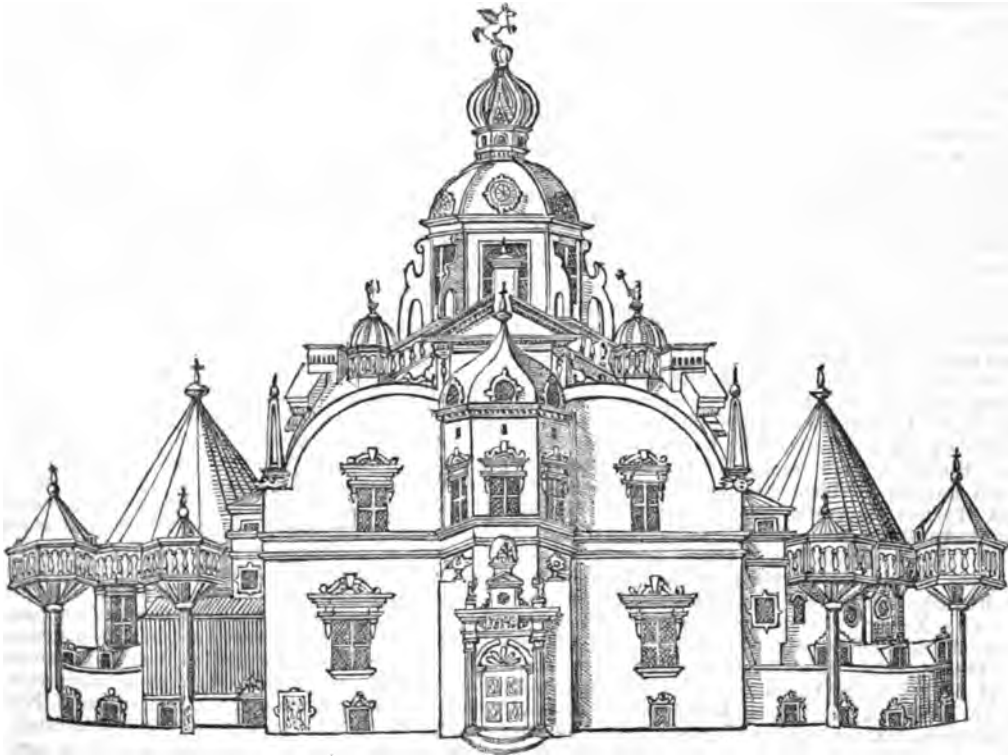
In 1569 he went to Augsburg, where, being pleased with the place, and finding astronomers there, he determined to remain. He here caused to be constructed a large quadrant, such as twenty strong men could hardly lift, with which he observed while he remained there. He left Augsburg and returned home in 1571, when his uncle Steno offered him a part of his house, with the means of erecting an observatory and a laboratory; for Tycho had become much attached to chemistry, and declares himself that from his twenty-third year he attended as much to that science as to astronomy. He constructed only a large sextant, for he always intended to return and pursue his studies in Germany, finding the public life of a Danish noble to be a hindrance. An event however happened in 1572, which, if our memory serves us, has been sometimes stated in popular works as the first excitement he received to study astronomy—with what correctness we have seen. Returning from his laboratory on the evening of November 11, 1572, he cast his eyes upon the constellation Cassiopea, and was thunderstruck by there perceiving not only a new star but one of greater splendour than any in that constellation. The country people also saw it, and he immediately set himself to determine its place and motion, if any. Happening to visit Copenhagen early in the year 1573, he carried with him his journal, and found that the savans of the university had not yet taken notice of the phenomenon. He excited great derision at a convivial party by mentioning his discovery, which however was changed into astonishment on his actually showing them the star. They thereupon became urgent that he should publish his notes, which he refused, being, as he afterwards confessed, under the prejudice that it was unbecoming for a nobleman to publish anything: but afterwards, seeing how vain and worthless were the writings on the same subject, he was pressed by his friends at Copenhagen, he consented to do so, with additions, to one of them for publication. It was itself continued visible, though gradually diminishing in brightness, till March, 1574. It was at first mistaken as Venus. [CASSIOPEA.]

As soon as Tycho had conquered his prejudice, he found to be useful, he committed a crime against his order by marrying.

least a plebeian, girl of Knudsthorp, named Christianna. Some say she was the daughter of a clergyman. By the interposition of the king the fury of his family at this step was cooled. Never were man's prejudices subjected to a more salutary course of discipline than those of Tycho Brahé. In two short years the proud noble became an author, a lecturer, and the husband of a woman of inferior rank. The students of the university desired to profit by his knowledge, and on his positive refusal, the king, to whom he felt his obligations, made it his own earnest request. No choice was therefore left to the unfortunate recusant; and he accordingly delivered the public lecture marked (H) in our preceding list, which, putting aside the astrology, is a sensible discourse; and, excepting a hint at the beginning that nothing but the request of the king and of the audience (for politeness' sake) had made him undertake an office for which he was so unfit by station and mediocrity of talent (for modesty's sake), does not contain any allusion to the supposed derogation. He informs his audience at the end that he intends to lecture on the Prutenic tables, and he did so accordingly. This lecture was first published in 1610 by Conrad Asiacus (we cannot unlatinize Gassendi's name), who got it from Tycho himself.

Tycho Brahé had all this time intended to travel again. He set out in 1575, leaving his wife and infant daughter

at home, and proceeded to the court of the Landgrave William of Hesse-Cassel, who was himself a persevering observer; so much so; that when, during an observation of the new star of 1572, servants ran to tell him the house was on fire, he would not stir till he had finished. On leaving his court, Tycho wandered through Switzerland and Germany, apparently seeking where he might best set up his observatory, and he had fixed his thoughts upon Basle. But in the meanwhile ambassadors had been sent from Denmark to the Landgrave of Hesse-Cassel, and that prince took occasion warmly to recommend Tycho Brahé and his studies to the notice of his own sovereign. The latter (Frederic II.) accordingly sent for Tycho after his return to Knudsthorp in 1576, and offered him possession for life of the island of Hven or Hoöna, taking upon himself all the expenses of his settlement. The offer was gladly accepted, and the first stone of the astronomical castle called Uraniberg or Oranienberg (the city of the heavens) was laid August 13, 1576. There is a full description of it in Gassendi, as also in (D) and (E). The following drawing is extracted from the former. It is necessary to warn our readers that the clumsiness of the old wood cut is *purposely* imitated, owing to some critical remarks we have heard on the figures in *ASTROLABE* (which see for the character of the instruments employed).



Besides this, there was an observatory sunk in the ground, and named Stellberg (city of the stars). These two buildings contained 28 instruments, all *extra-meridional*, but distinguished, as appears in (E), by many new contrivances for avoiding error, and by a size and solidity which rendered graduation to a single minute attainable; though it may be doubted whether the instruments themselves were calculated to give so small a quantity (for that time) with certainty. Tycho's instruments are vaguely said to have cost 200,000 crowns; the king allowed 2000 dollars a-year, besides a fief in Norway and a canonry in the church of Roeskilde.

In 1577 he began his observations, and on November 13, 1577, saw the comet which is the subject of (B). This luminary, and others of the same kind, gave occasion to his discovery that the *spheres* of the planets [PRIMUM MOBILE, PTOLEMAIC SYSTEM] could not be solid, since they were cut in all directions by the orbits of comets, which must be called the first decisive blow against the received notions. And Tycho was the first who proved comets to have such a parallax as was incompatible with their being

atmospheric, or even *sublunary*, bodies. He observed altogether seven comets, the last in 1596.

It is not our intention to follow Tycho Brahé at length through his splendid career at Uraniberg. No space here allowable would suffice to detail his results sufficiently for astronomical reference. We must therefore content ourselves with a few words on the state in which he found and left astronomy. The reader may fill up various points from the article *ASTRONOMY*.*

From the time of Ptolemy it may be said that astronomy had made some advances, but these did not certainly compensate the defects which time must introduce into tables of pure observation, unaided by any such knowledge of the system as will make accurate prediction possible. If the

* In reference to that article, the reader of course must be aware that so very large a number of facts and dates could not be taken from original authorities, but only from histories of reputation, and it cannot be more correct than the latter. Of the loose way of speaking with regard to dates, we have there complained; and there is an instance in Tycho Brahé where it is said that he began to observe in Hoöna in 1582. This is true in a sense, for he did in that year begin the regular observation of stars and planets (Mars particularly) which led to the Rudolphine tables; but he had been observing (though not with finished means or methods) from 1577.

Arabs did some good by their observations, they did nearly as much mischief by their theories; and the Alphonse tables are a proof that the astronomers of that day did not know their heavens so well as Ptolemy did his. It was impossible for any one to make a considerable advance with such instruments as Tycho Brahé actually found in use, or without rejecting all theories of the heavenly bodies then in vogue, and relying entirely upon observation. The test of a theory is its accordance with nature; those of the time in question were so defective that their falsehood might be perceived by merely a little globe large enough to be held in one hand. Those who were engaged in observation ought to have seen this: it is the merit of Tycho Brahé that he was the first who *did* see it. But he did more than this: he saw also the means of remedying the evil, by his mechanical knowledge in the construction of instruments, his perception of the way in which those instruments were to be used, and the results of observation to be compared. He showed himself a sound mathematician in his methods for determining refraction, in his deduction of the variation and annual equation of the moon, and in many other ways. He proved himself to be at the same time an inventor of the means of observation and of the way of using them, such as had not appeared since Hipparchus; and it is to his observations that we owe, firstly, the deduction of the real laws of a planet's motion by Kepler, and of their proximate cause by Newton. There are many instances in which good fortune seems to have made a result of more importance than the discoverer had any right to presume, either from the skill or labour employed in obtaining it: but in the case of Tycho Brahé we believe we are joined by a very large majority in thinking that fortune deputed her office, *pro hæc vice*, to justice, and that the eminence of the success to which he has led the way is no more than is due to the excellence of the means which he employed, and the sagacity he displayed in combining his materials. Where Hipparchus and Ptolemy have left half a degree of uncertainty, Tycho Brahé left two minutes, if not one only. This Bradley afterwards reduced to as many seconds, in the case of the stars; and the ages of these three are the great epochs of astronomy, as a science of pure observation.

We must now devote some space to the system which he promulgated against that of Copernicus, and which is considered as the great defect in his astronomy. And first, we must observe that it has been customary to keep the name of Copernicus under every improvement which his system has undergone in later times. His notions were received at his hands loaded with real difficulties, supported by arguments as trivial as those of his opponents; Galileo has answered the mechanical objections, Bradley has produced positive proofs, Newton has so altered the system that Copernicus would neither know it nor admit it, by overthrowing the idea that the sun was *fixed* in the centre of the universe (which is the real *Copernican* system), and thus mended in one part, augmented in another, overthrown in a third, and positively proved in a fourth, all that is known of the relative motions of the system in modern times is removed back two hundred years, called Copernican, and confronted with Tycho Brahé. Now the real state of the case is this: that the latter did compound, out of the systems of Ptolemy and Copernicus, a system of his own, which, while it seized by far the greater portion of the advantages of the latter, was not open to the most material objection. (See a paper entitled, *Old Arguments against the Motion of the Earth*, 'Companion to the Almanac,' 1836.) And we assert, moreover, that of all the inconclusive arguments of that day, which concern the subject in question, the reply of the Copernicans to Tycho Brahé is the *most* inconclusive. The system of Tycho Brahé consists in supposing, 1. That the stars all move round the earth as in the Ptolemaic system. 2. That all the planets, except the earth, move round the sun as in the Copernican system. 3. That the sun, and the imaginary orbits in which the planets are moving, are carried round the earth. Imagine a *planetarium* on the system of Copernicus placed over a table, above which is a light. As the earth moves, let the whole machine be always so moved, that the shadow of the earth shall fall upon one and the same part of the table. Then the motions of the shadows of the other planets and of the sun will be according to the system of Tycho Brahé. Mathematically speaking, it does not differ from that of Copernicus; we shall now consider it physically.

The stars, to the naked eye, present diameters varying from a quarter of a minute of space, or less, to as much as two minutes. The telescope was not then invented which shows that this is an optical delusion, and that they are points of immeasurably small diameter. It was certain to Tycho Brahé, that if the earth did move, the whole motion of the earth in its orbit did not alter the place of the stars by two minutes, and that consequently they must be so distant, that to have two minutes of apparent diameter, they must be spheres of as great a radius at least as the distance from the sun to the earth. This latter distance Tycho Brahé supposed to be 1150 times the semi-diameter of the earth, and the sun about 180 times as great as the earth. Both suppositions are grossly incorrect; but they were common ground, being nearly those of Ptolemy and Copernicus. It followed then, for any thing a real *Copernican* could show to the contrary, that some of the fixed stars must be 1520 millions of times as great as the earth, or nine millions of times as great as they supposed the sun to be. Now, one of the strong arguments against Ptolemy (and the one which has generally found its way into modern works) was the enormous motion which he supposed the stars to have. The Copernican of that day might have been compelled to choose between an incomprehensibly great magnitude, and a similar motion. Delambre, who comments with brief contempt upon the several arguments of Tycho Brahé, has here only to say, 'We should now answer that no star has an apparent diameter of a second.' Undoubtedly, but what would you have answered *then*, is the reply. The stars were spheres of visible magnitude, and are so still; nobody can deny it who looks at the heavens without a telescope; did Tycho reason wrong because he did not know a fact which could only be known by an instrument invented after his death?

Again, the mechanical difficulties attending the earth's motion were without any answer which deserved attention, even in that day. That a stone dropped from a height fell directly under the point it was dropped from, Copernicus accounts for by supposing that the air carries it: he is as well as his opponents, believing that but for the air the spot at first directly beneath the stone would move from under it. We are of opinion that the system of Tycho Brahé was the only one of that day not open to serious physical objections, taking as a basis the notions of mechanics admitted by all parties. To us the system of Copernicus appears a premature birth: the infant long remained sickly, and would certainly have died if it had not fallen under a better management than that of its own parents.

Frederick II. died in 1588, and Tycho remained unmolested under his son Christian IV. till 1596. Gassendi relates that the nobles were envious when they saw foreigners of importance come to Denmark solely to converse with Tycho; that the medical men were displeased at his dispensing medicines gratis to the poor; and that the minister had a quarrel with Tycho about a dog. Malte-Brun relates this more distinctly, apparently from the *Dansk Magazin*, or from Holberg's 'History of Denmark,' so that it seems most probable that the destruction of the observatory at Hoëne arose from a personal squabble between this minister, called Walckendorf, and a dog of Tycho, whose name has not reached us. The astronomer was gradually deprived of his different appointments, and in 1598 removed, with all his smaller apparatus, to Copenhagen. A commission, appointed by the minister, had declared his methods not worth prosecuting, and his instruments worse than useless.

In the summer of 1597 he finally left his country, and removed with his wife, two sons, and four daughters, to Rostock, from whence he shortly removed to Wandsbeck, near Hamburg, at the invitation of Count Rantzau. At the end of 1598, he received a pressing invitation from the Emperor Rudolph II., promising him every assistance if he would remove with all his apparatus to the imperial dominions. Thither Tycho arrived in the spring of 1599, having been detained during the winter at Wittenberg, by the circumstance of a contagious disorder raging in Prague. The emperor settled upon him a pension of 3000 ducats, and offered him the choice of three different residences. He chose that of Benateck, (Benachia or Benatica, *Geogr.*) five miles from Prague, and called the Venice of Bohemia. He sent for the remainder of his instruments from Denmark, and remained at Benateck till February, 1601, when he settled in Prague.

The celebrated Kepler joined him in February, 1600. Tycho had repeatedly written to invite him, having first entered into communication with him in 1598, when he sent Tycho a copy of his *Mysterium Cosmographicum*. The latter advised him to lay aside speculations, and apply himself to the deduction of causes from phenomena. It is to following this advice that Kepler owes all his fame; so that Tycho not only furnished him with the observations necessary, but was his adviser (and never was adviser more wanted) in the way of using them. In the year 1601, they were employed together in the composition of tables from the Uraniberg observations, which tables they agreed should be called Rudolphine. But on the 13th of October, 1601, the effects of a convivial party, combined with inattention to himself, produced a mortification of the bladder. He continued for many days in pain, and died on the 24th of the month. During his delirium, he several times repeated '*ne frustra vixisse videar*,' which must be interpreted as something between a hope and a declaration, that he had not lived in vain. Nor will he be thought to have done so by any one who ever found his longitude at sea, or slept in quiet while a comet was in the heavens, without fear of the once supposed minister of God's anger. For if the list of illustrious men be formed, to whom we owe such benefit, it will be found that his observations form the first great step of the moderns in astronomy. There was a report set abroad in Denmark, that he had been poisoned by the emperor, probably the imagination of those who had driven him from his country. He was buried at Prague, and his monument still exists there. (Malte-Brun.) He was of moderate stature, and latterly rather corpulent, of florid complexion and light hair. Gassendi refers to the portrait in his own work, in testimony of the skill with which the wound already mentioned was repaired; and certainly, with the exception of a very great fullness and cylindricality of figure about the lower part of the nostrils, there is nothing there to excite remark. In his younger days he cultivated astrology, but latterly renounced it altogether. He has left no record of his chemical and medical studies. He was a copious writer of Latin verses. The following, which are a fair specimen, are part of those written by him upon one of his instruments which had belonged to Copernicus. They will show how highly he admired that astronomer.

Quid non ingenium superat? sunt montibus olim
Incessum montes congesti, Pelion, Ossa,
Ætnaque testantur, simul his glomeratis Olympum
Inaemurque alti, nec dum potuisse Gigantes,
Corpore prævalidos, sed mentis acuminè inertes
In superas penetrare cœna. Ille inclytus, ille
Viribus ingenii cœnans, robore nullo,
Fustibus his parvis cœlum superavit Olympum.
O tanti monumenta viri! Sint lignea quævis;
Hæc tamen invideat saluum, si nosceret, aurum.

Some of his earlier observations are preserved at Copenhagen. For the present state of Uraniberg, see HOËNE.

It is our belief that the merits of Tycho have been underrated, both as an inventor of instruments, and as a philosopher. As an observer, his works have spoken for themselves, in language which cannot be mistaken.

BRAHILOW, BRAILA or IBRAHIL, a fortified town, in Wallachia, at the mouth of the Sereth, which falls into the Danube on its left or northern bank. It is not included in the independent territory of Wallachia, but has been retained under exclusively Turkish dominion, and, with its adjacent dependencies, constitutes part of the sandshak of Silistria in Bulgaria. At this spot the Danube is divided into six arms, one of which forms the port of Brahilow, while the islands they create are considered neutral ground between the Turk and the Russian. The town is defended by a strong citadel which commands the rivers below it, is the seat of a pasha of three tails as its commandant, possesses a pop. of about 30,000, has a valuable sturgeon fishery, and exports great quantities of Wallachian corn to Constantinople. S. Hall places it in 45° 15' N. lat., 27° 54' E. long.

BRAHMA, a Sanscrit word, the name of the Supreme Being in the religious system of the Hindus. The primitive meaning of the word is not quite clear; it is evidently connected with the verbal root *brîh*, 'to grow, to expand,' whence *brîhat*, 'great;' and has been explained by some as properly implying 'the widely expanded Being.' The crude form of the word, or the name in its uninflected state, is *Brahman*, and it is of great importance well to distinguish a two-fold use of that term, accordingly as it is declined as a substantive of the neuter or of the masculine gender.

When inflected as a substantive of the neuter gender, its termination in the nominative case is a *short a*, *Brahmâ* (sometimes written *Brahme* or *Brahm* in English works on Hindu mythology), and thus declined it designates the essence of the Supreme Being in the abstract, devoid of personal individuality. When treated as a masculine word, it takes a *long ā* in the nominative case, *Brahmā*, and thus modified, becomes the name of the first of the three gods who constitute the triad of principal Hindu deities.

Brahmā, the impersonal divine substance, is with the Hindus not an object of worship, but merely of devout contemplation. According to the Vēdānta system of philosophy, which recognizes the ancient sacred writings of the Hindus as the authority of the doctrines which it advances, *Brahmā* is the great source from which the visible universe and all the individual deities of mythology have sprung, and into which all will ultimately be re-absorbed. 'As milk changes to curd, and water to ice, so is *Brahmā* variously transformed and diversified, without aid of tools or exterior means of any sort. In like manner the spider spins his web out of his own substance; spirits assume various shapes; and the lotus proceeds from pond to pond without organs of motion.' 'Ether and air are by *Brahmā* created; but he himself has no origin, no procreator nor maker, for he is eternal, without beginning as without end. So fire, and water, and earth, proceed mediately from him, being evolved successively the one from the other, as fire from air and this from ether.' The human soul, according to the same authority, 'is a portion of the supreme ruler, as a spark in the fire. The relation is not as that of master and servant, ruler and ruled, but as that of whole and part.' It is subject to transmigration, and the route on which, after the death of the human individual, it proceeds to its ultimate re-absorption in the divine essence, is variously described in divers texts of the Vēdas. 'But he who has attained the true knowledge of God does not pass through the same stages of retreat, proceeding directly to re-union with the Supreme Being, with which he is identified, as a river, at its confluence with the sea, merges therein altogether. His vital faculties and the elements of which his body consists are absorbed absolutely and completely; both name and form cease; and he becomes immortal, without parts or members.' (Passages from the *Brahma-sūtras*, or aphorisms on the Vēdānta doctrine, by Bādarāyana; translated by Mr. Colebrooke; *Transact. of the Roy. Asiat. Soc.*, vol. ii. passim.)

Brahmā, as an individual deity in mythology, is the operative creator of the universe; forming, with *Vishnu* (the preserver or sustainer) and *Siva* (the destroyer), the triad of principal Hindu gods. His epithets, which have been collected by ancient Sanscrit lexicologists, are numerous: some of the most usual are, *Swayambhu*, 'the self-existent;' *Paramēshthi*, 'who abides in the most exalted place;' *Pitāmaha*, 'the great father;' *Prajāpati*, 'the lord of creatures;' *Lōkēsa*, 'the ruler of the world;' *Dhātṛi*, 'the creator.' In the mythological poems and in sculpture he is represented with four heads or rather faces, and holding in his four hands a manuscript book containing a portion of the Vēdas, a pot for holding water, a rosary, and a sacrificial spoon. (Moor's *Hindu Pantheon*, plates 3, 4, 5.) In the sculptures of the cave temple of Elephanta, he is represented sitting on a lotus supported by five swans or geese. (*Transact. of the Lit. Soc. of Bombay*, vol. i. pp. 222-225, &c.) Exclusive worshippers of *Brahmā* and temples dedicated to him do not now seem to occur in any part of India: homage is however paid to him along with other deities. The Brahmans, in their morning and evening worship, repeat a prayer addressed to *Brahmā*, and at noon likewise they go through certain ceremonies in his honour: on the occasion of burnt offerings, an oblation of clarified butter is made to him, but it does not appear that bloody sacrifices are ever offered to *Brahmā*. At the full moon of the month Māgha (January-February), an earthen image of *Brahmā*, with that of *Siva* on his right and that of *Vishnu* on his left hand, is worshipped; and dances, accompanied with songs and music, are performed as at the other Hindu festivals. When the festivities are over, the images of the three gods are cast into the Ganges. A particular worship is paid to *Brahmā* at Pushkara or Pokher in Ajmere, and at Bithore in the Doab, where he is said to have performed a great and solemn sacrifice on completing the act of creation; and the pin of his slipper, which he left behind him on the occasion, and which is now fixed in one of the steps of the Brah-

maverta Ghat near Bithore, is still an object of adoration there. On the full moon of Agrahâyana (November-December), a numerously attended fair is annually held there in honour of Brahmâ. (Wilson, in the *Asiat. Res.*, vol. xvi. p. 14, 15; Ward, *View of the Hindus, &c.*, 2d edit., vol. ii. p. 29, 30.)

BRAHMANS. [HINDUS, CASTES OF.]

BRAHMAPOOTRA, one of the largest riv. of Asia and in many respects one of the most remarkable on the globe. Sixty or seventy years ago this riv. was almost unknown to Europeans; though they had information about its neighbour the Ganges more than three centuries before the beginning of our æra.

The farthest branches of this riv., which has a common embouchure with the principal branch of the Ganges, rise between 97° and 98° E. long., and between 28° and 29° N. lat. Here, about $28^{\circ} 30'$ N. lat., and $97^{\circ} 30'$ E. long., stands a snow-capped mountain range, which in the present state of our geographical knowledge must be considered the most easterly portion of the Himalaya range: the Taluka, the most N. of the sources of the Brahmapootra, has its origin in these mountains. No European has yet seen its source, but Wilcox was informed that it runs to the S.S.W. in a narrow valley between high, steep, and mostly barren rocks, till it joins the Taluding, a riv. not inferior in size, which descends from the mountains of Nambio (28° N. lat.), a ridge belonging to the Langtan chain, which latter divides the upper branches of the Brahmapootra from those of the Irawaddi. After the junction of the Taluka and Taluding the river continues its course to the S.S.W. between high mountains, and about 20 m. lower is the most E. point to which Wilcox advanced. Here the enclosing mountains are covered with jungle, with now and then an intermixture of grass in spots. The riv. is full of foam, and the rocks in its bed are of such enormous size, that it is hardly possible to conceive that they have been brought down by the riv. even in the rainy season, but their great variety shows that they are not *in situ*. Sienitic granite, in which garnets are found 7-10ths of an inch in diameter, serpentine of a flinty hardness, and primitive limestone are most numerous.

Near this place the riv. changes its direction, flowing for some miles to the N.W. between high mountains and in a narrow valley; it then turns to the S., and a few miles lower down it issues from the mountains by a narrow pass, called Prabhu Kuthâr, in which the riv. is about 200 ft. wide, and runs with great violence. Near this pass, on the S. banks of the riv. is the Brahma-koond (the source of the Brahma) or Deo Pâni, a place of pilgrimage among the Hindus. It is nothing but a good sized pool, 70 ft. long by 30 wide, enclosed by high projecting rocks, from which two or three rills descend into the pool. From this place the riv. has obtained its sacred name of Brahmapootra, the 'offspring of Brahma,' though it is commonly called by the natives Lohit, or Lohitiya (Laubitiya in Sansc., the red river).

After passing the Prabhu Kuthâr the Lohit enters the valley of Upper Asam or Sadiya, where the hills retire to a distance of 30 or 35 m. from each bank. But though carrying a great volume of water, the Lohit becomes navigable for large boats only at Sonpura, 12 m. above Sadiya. In this distance the riv. does not intersect any rocky strata, but the torrents descending from the hills bring down in the rainy season an immense and yearly accumulating collection of boulders and round pebbles of every size, which blocking up the river divide it into numerous channels, and produce frequent rapids of short extent; all these circumstances render its navigation extremely difficult and nearly impossible. In this tract the Lohit begins to display its character of dividing its stream and forming large longitudinal islands, a peculiarity which is frequently observed in its course through Asam. Near $96^{\circ} 15'$ E. long., and $27^{\circ} 51' 21''$ N. lat., the riv. divides into two branches, of which the N. and larger is called the Lohit or Buri Lohit, and the S. Sukato: these branches unite again about 10 or 12 m. farther downward. The island thus formed is about 2 m. wide.

From the Prabhu Kuthâr to Sonpura the riv. runs nearly W., and in this tract its waters are only increased by small streams. But between Sonpura and Sadiya, where it makes a bend to the S., the Lohit is joined by the Dihing, a considerable riv., whose upper branches rise a hundred miles from its mouth. The best known is

the Dupha Pani, which originates on the W. declivity of the mountains, over which the Phungan Bum pass ($27^{\circ} 30'$ N. lat.) leads to the countries on the banks of the Irawaddi, and attains a height of 11,000 ft. Hence the Dupha Pani flows between mountains in wild rapids to the E. and unites with the other branch, called the Noa Dihing above Logo. The upper course of the Noa Dihing is less known, but it would appear that its source is farther from the place of junction than that of the Dupha Pani, and probably on the S. declivities of the Langtan Mountains. From Logo downwards the Noa Dihing is navigable for boats.

Nearly opposite the mouth of the Noa Dihing the Kundul joins the Lohit. On the banks of this small river stands Sadiya, the capital of Upper Asam: the Lohit is here about 1200 ft. above the level of the sea.

West of Sadiya, but at no great distance, the waters of the Lohit are increased by those of the Dihong, which brings a volume at least three times as large as that of the Lohit at their junction. A few miles from its mouth the Dihong is joined by the Diiong, a considerable river descending from the N.N.E., but by far the largest volume of water is brought down by the Dihong itself, which flows as far as it is known from the N.N.W. This river has been examined only to a short distance from its mouth, where it was found rushing down in rapids, interrupted only by cataracts. The great volume of its waters, added to other circumstances, renders it probable that this river is the same which is known in Tibet by the name of Sampoo or Yaru Tsangtotsin, which opinion is noticed more particularly at the end of this article.

After its junction with the Dihong, the Lohit flows in a S.W. direction, and forms numerous islands, so that hardly in any place does the whole volume of its waters run in one bed. Here it receives on the S. the Buri Dihing, a considerable river, whose origin is near the banks of the N. a Dihing, and separated from it by such low grounds, that at certain seasons of the year a portion of the last mentioned river flows to the Buri Dihing and constitutes as it were its source, which has given rise to the opinion that the Noa Dihing at some remote period did not discharge its waters at the place where it now empties itself in the Lohit, but constituted the upper branches of the Buri Dihing. The Buri Dihing runs nearly in a due western direction, probably above 120 m., but its upper course is not known.

A few miles after this junction, the Lohit divides into two large branches, the northern of which is called Buri Lohit, and the southern Buri Dihing, as if it was the continuation of the large affluent which joined it a few miles farther up. These branches include the fertile island of Majuli, which extends from $94^{\circ} 30'$ to $93^{\circ} 40'$ E. long., about 50 m. in length, with an average breadth of 9 m. Opposite this island the Buri Lohit is joined by the Suban Shiri, a river not inferior in volume of water to any of the tributaries of the Brahmapootra, except the Dihong. It has not been examined to any great distance from its mouth, but the abundance of its waters suggested to Wilcox the idea that it may be the lower course of the Mon-taiu, a large river of Tibet; an opinion which is very probable.

Into the southern branch of the Brahmapootra, or the Buri Dihing, falls the small river Dikho, on which the present capital of Asam, Jorhath, is situated, and lower down, near the place where both branches reunite, the Dhunairi, which rises at a great distance to the S. in the territories of the Raja of Moonipore, in a country not yet explored by Europeans.

After the Buri Lohit and the Buri Dihing have reunited and flowed down for nearly 30 m. in one channel, divided only at a few places by small islands, the Brahmapootra divides again at the town of Bishenath ($93^{\circ} 15'$ E. long.) into two large branches, of which the northern and larger retains the name of Lohit, and the southern is called Kullung or Kolong. The island enclosed by these two branches of the Brahmapootra extends in length upwards of 75 m., with a width of 20 or 25 m. in the middle. A European traveller does not mention the native name of this island, Ritter calls it the island of Kullung. The Kullung branch of the Brahmapootra here receives a considerable river, the Deyong, whose sources are situated far to the S. in the kingdom of Katchar, and which breaks through the chain of the Naga Mountains, like the Dhunairi.

The Kullung branch of the Brahmapootra reunites to the Lohit a few miles above Gowahatty, below which was

the extensive valley of Asam may be considered as terminated; for here the offsets of the Himalaya range on the N. and the Garo Hills on the S. approach the river within a short distance, and in many places leave but a narrow tract along its banks. The Brahmapootra runs here with an undivided stream, and is hardly 1200 yards wide, which is its smallest breadth after its junction with the Dihong. Its stream is so exceedingly rapid, that in the rainy season vessels are obliged to wait for a strong westerly wind, to enable them to stem the force of the current. Below Goyalpara, the Brahmapootra enters the plains of Bengal, where it is only about 120 ft. above the level of the sea.

The general direction of the Brahmapootra from the western extremity of the island of Kullung to its entry into the plains of Bengal lies due E. and W., and it preserves this direction still farther down to the town of Rangamatty. Below Goyalpara it receives on the N. the Bonash or Manas, a considerable river which traverses the eastern portion of Bootan, but whose course is nearly unknown, except so far as it runs through the plains of Bengal.

Near Rangamatty the Brahmapootra declines to the S.W., and shortly afterwards takes a due southern course to 25° N. lat., where it begins to run to the S.E. Between 26° and 25° the first communication with the Ganges commences. A small branch of the Brahmapootra running due S. falls into the Issamutty, a branch of the Teesta, which joins the Ganges near Jaffiergunge; and another water-course, which branches off from the Brahmapootra a little farther down, and is called Lobnee, falls into the antient bed of the Ganges below Jaffiergunge.

The Brahmapootra continues its south-eastern course nearly to 24° N. lat., where it is joined by the Barak or river of Silhet. This latter river has its still unknown origin in the mountains of Tiperah, and enters the kingdom of Katchar from the S. near 93° E. long.; it then turns suddenly to the W. and continues in this direction through the prov. of Silhet; but E. of 92° E. long. it branches off in different channels, of which the southern and most considerable runs W.S.W. and falls into the Brahmapootra near the point where the parallel 24° is cut by the meridian 91°.

From its junction with the Barak the Brahmapootra runs S.S.W. with large bends until it reaches the neighbourhood of Fringybazar, where its channel widens to such a breadth, that it struck with amazement our great geographer Rennel, and led him to suppose that the Megna, which is the name for the river from Fringybazar to the sea, had at some remote period received the waters of the principal branch of the Ganges in addition to those of the Brahmapootra. He traced the old channel of the Ganges from Fringybazar to Dacca and Jaffiergunge, and hence through the lakes and morasses between Jaffiergunge and Nattore to Pootyah and Bauleah. At present both rivers have separate embouchures, though they approach so near one another that their beds at some places are hardly two miles apart. Even after they have left the continent their currents are still divided, that of the Ganges running to the W. of the island of Shabazpore, while the Megna sends its waters to the gulf of Bengal by the channel between the islands of Shabazpore and Hattia.

The whole course of the Brahmapootra, as here described, may be estimated at 860 m. of which 160 m. belong to its upper course E. of the mouth of the Dihong, 350 m. to its middle course to Goyalpara, and the remainder to its lower course to the island of Hattia. The Ganges runs 1350 m., and therefore exceeds the Brahmapootra by near 500 m. But the Brahmapootra carries down a much greater volume of water. It was found, in January, 1828, that it discharged near Goyalpara below the mouth of the Bonash, in one second, 146,188 cubic ft. of water, while Rennel calculated that the principal branch of the Ganges in the dry season discharges only 80,000 cubic ft. This fact is a strong reason in support of the Dihong being the river which in Tibet is known by the name of Sampoo; but others are of the opinion that the Sampoo joins the Irawaddy. We shall briefly advert to this controversy.

At the time of D'Anville the Brahmapootra was hardly known further than by name. He therefore inserted it in his map of southern Asia as a small river running N. and S. nearly in the place where at present the Gadadhar or Tehin-tsiu descends from the Himalaya of Bootan. He knew, however, that the Sampoo runs to the E., and that it does not join the Kinche-kiang or Yantse-kiang. He therefore conjectured that this river must join one of the

large rivers of the peninsula without the Ganges, and he hit on the largest, the Irawaddy. When Rennel surveyed the lower course of the Brahmapootra in 1769, he was struck by its magnitude, and he collected some information respecting its upper course, which led him to conjecture that the Sampoo of Tibet discharged its waters by this channel. The conjecture was confirmed by the information obtained by Turner at Teshoo Loomboo. Rennel inserted this river in the first edition of his map of Hindoostan, where with great ingenuity he hit nearly on the same place where at present the Dihong is found to break through the Himalaya mountains. This representation of the union of the Sampoo and Brahmapootra was not questioned till 1824, when the British troops entered Asam, and it was discovered that the sources of the Brahmapootra were situated much farther E. than the place where in Rennel's map the Sampoo enters the vale of Asam. Lachlan and Julius Klaproth accordingly conjectured that the Sampoo runs much farther to the E., and encircling the mountains at the sources of the Brahmapootra, joins the Irawaddy. Klaproth, who had carefully examined the Chinese geographers, collected some passages which he thought sufficient to support his opinion. But the British officers, who remained in Asam, and especially Capt. Bedford and Lieut. Wilcox, ascertained that the Dihong was a very large river. Their attempts to ascend it were frustrated partly by the nature of the river within the mountains, where it comes down in a succession of rapids and cataracts, and partly by the mountaineers. But Wilcox succeeded in passing the mountain range between the upper branches of the Brahmapootra and those of the Irawaddy, and he found that in the country of the Bor Khamtis the Irawaddy is an inconsiderable river, only 80 yards wide, and the natives were not acquainted with any large river in the neighbourhood. This renders it all but certain that the Sampoo of Tibet does not join the Irawaddy, or any other river in the adjacent countries.

On the other hand, as far as the course of the Sampoo as well as of the Dihong has been fixed by astronomical observations, it is by no means improbable that both are the same river. The only point which has been determined on the banks of the Sampoo, by actual observation, is Teshoo Loomboo, which Turner found at 89° 7' E. long. Farther down, the position of H'Lassa, which lies at no great distance from the Sampoo on its northern bank, has been calculated by Gaubil to be 88° 4' E. long. of Paris, or 90° 24' of Greenwich. Below H'Lassa the Sampoo continues its course for a considerable distance to the E., until all information of its farther course is lost. The Dihong issues from the mountains, according to the survey, at about 95° 30' E. long. Between H'Lassa and this point there are therefore still five degrees and six minutes for the known and unknown portion of the course of the river.

It is impossible to draw any conclusion from the difference of lat., because the Chinese place Tibet much too far S. In D'Anville's map to Du Halde's description of China the known course of the Sampoo terminates at 26° 40' N. lat., and on the Chinese map of Kienlong in 27° 30', and consequently to the S. of the valley of the Brahmapootra Klaproth accordingly, to support his opinion, has been obliged to place it at 28° 30', and Berghaus even at 29° 15' N. lat. But if we even admit the lat. of Klaproth, the distance of the termination of the known portion of the Sampoo would only differ 24 minutes of lat. from the most northern point on the banks of the Dihong, to which Wilcox ascended this river (28° 6' N. lat.).

Klaproth supports his opinion of the identity of the Sampoo and Irawaddy, by a few passages from Chinese geographers; but it is evident that all the countries between the termination of the known course of the Sampoo and China Proper were and still are as little known to them as to us; and as they had no knowledge at all of the Lohit and the vale of Asam, they thought it necessary to unite the Sampoo with the most considerable river of the peninsula without the Ganges, the Irawaddy. To the passages of the Chinese geographer may be opposed the decided opinion of the lamas of Tibet, who told Turner that the Sampoo running to the S. unites its waters with the river flowing down from the Brahmakoond.

All these circumstances make it very probable that the Dihong is the continuation of the Sampoo. By adding this riv. the course of the Brahmapootra is increased by upwards of 1000 miles: this circumstance would sufficiently explain

why this riv. brings down a volume of water, which raises it far above the Ganges and Irawaddy, and claims for it the first place among the rivers of S. Asia. (Rennell; Francis Hamilton; Klaproth's *Mémoires*; Neville and Wilcox in *Asiatic Researches*; Ritter, *Asien*; *Maps of Klaproth, Berghaus, and Wilcox.*)

BRAHMEGUPTA. [VIGA GANITA.]

BRAIDWOOD, THOMAS, is known as one of the earliest teachers of the deaf and dumb in this island. He began this useful career at Edinburgh in 1760. No authentic record of the methods which he pursued has been made known, unless a work published by the late Dr. Watson, formerly the head master of the London Institution for the Deaf and Dumb, may be so considered. Dr. Watson, as an assistant to Mr. Braidwood, acquired his mode of tuition, and says, speaking of Braidwood, 'His method was founded upon the same principles; and his indefatigable industry and great success would claim from me respectful notice, even if I could forget the ties of blood and of friendship' (*Instruction of the Deaf and Dumb, Introduction*, p. xxiii. London, 1809). A work entitled *Vox Oculis Subjecta*, published at London in 1783, the production of an American gentleman, whose son was educated by Braidwood, professes to give 'a particular account of the academy of Messrs. Braidwood, of Edinburgh,' but it throws no light upon the system of instruction pursued by those gentlemen. It is chiefly valuable for its copious extracts from the writings of Bulwer, Holder, Atman, Wallis, and Lord Monboddo, who had all considered the subject of speech with philosophical attention, and in relation to those persons who are born deaf, or who become so at an early age, and who consequently labour under the deprivation of speech. There was doubtless much merit in the mechanical methods used by Braidwood and his son to produce in their pupils an artificial articulation, and in the persevering application of principles which had been previously ascertained. Braidwood succeeded in attracting the notice of many eminent persons. He is spoken of with praise by Arnot (*Hist. of Edinburgh*), Dr. Johnson (*Tour to the Hebrides*), Lord Monboddo (*Origin and Progress of Language*), Pennant (*Tour through Scotland*), and John Herries (*Elements of Speech*). In addition to these, Lord Morton, president of the Royal Society, Lord Hailes, Dr. Robertson, Sir John Pringle, Dr. Franklin, Dr. Hunter, and others attended the public examinations of his pupils, and attested their progress. After having resided some years at Edinburgh, Braidwood removed his establishment to Hackney, near London, where he continued to instruct the deaf and dumb, and to relieve impediments in the speech, till his death in 1806.

BRAIN, a soft and pulpy organ, which in man occupies the cavity of the cranium, and forms one of the central masses of the nervous system [NERVOUS SYSTEM]. In man and all the higher animals the nervous system consists of four distinct parts—the white threads called nerves; knots or masses of nervous matter situated along the course of the nerves called ganglions; a long cord of nervous matter filling the cavity of the vertebral or spinal column, called the spinal cord; and a large mass of nervous matter now generally considered as a continuation and expansion of the spinal cord, called the brain. The spinal cord and brain constitute the two central masses of the nervous system, that is, the immediate seat of the functions peculiar to this system.

The general mass of nervous matter designated under the common term brain, together with its membranes, vessels, and nerves, completely fills the cavity of the skull. This mass is divided into three parts, the *cerebrum* or *brain proper*, which occupies the whole of the superior part of the cavity of the cranium; the *cerebellum*, much smaller than the cerebrum, whence its name, *little brain*, which occupies the lower and back part of the cavity of the cranium; and the *medulla oblongata*, by much the smallest portion of the mass, situated at the basis of the cavity, beneath the cerebrum and cerebellum. The medulla oblongata passes out of the cavity of the cranium into that of the vertebral canal by the foramen magnum of the occipital bone, being continuous with and forming the commencement of the spinal cord.

This general nervous mass is closely enveloped in three distinct membranous coverings, two of which have been called *matres*, from the fanciful notion that they give to all the other membranes of the body. The ex-

ternal covering termed *dura mater*, from its being of a firmer texture than the other two membranes, encloses the brain with all its appendages, and lines the whole internal surface of the bones of the cranium. It is of a fibrous texture, the component fibres interlacing each other in every possible direction, and forming by their firmness and density the thickest and strongest membrane of the whole body. By its external surface the dura mater adheres every where to the inner surface of the cranium, just as the periosteum adheres to other bones. When torn from the cranium its surface appears somewhat rough and irregularly spotted with bloody points, which are the lacerated orifices of vessels that pass between the membrane and the surrounding bones. These vessels are much more numerous in the young than in the adult, and are most abundant at the sutures or junctions of the bones that compose the skull. The inner surface of the dura mater, which is shining and smooth, is lubricated and kept in a state of moisture by a fluid secreted by its own vessels. This membrane performs a twofold office; it supplies the place of the periosteum to the inner surface of the bones of the cranium, sustaining their nutrient vessels; and it serves as a defence to the brain, and a support to the different masses into which it is divided.

The dura mater gives off several elongations or productions called *processes*, which descend between certain portions of the brain; the most remarkable of which is termed the *superior longitudinal process*, which extends from the fore to the back part of the skull, between the lateral halves of the cerebrum. Narrow in front, it becomes gradually broader as it passes backwards, bearing, as has been observed, some resemblance in shape to a sickle or scythe, whence the common name of it, *falx cerebri*.

Where the falx cerebri terminates behind, there proceeds a large lateral expansion of the same membrane, extending across the back part of the skull beneath the posterior part of the cerebrum, and forming a complete floor or vault over the cerebellum. This membranous expansion is called the *torium*, the obvious use of which is to prevent the cerebrum from pressing upon the cerebellum; while from the middle of the tentorium proceeds another membranous expansion which descends between the lobes of the cerebellum and terminates insensibly at the edge of the foramen magnum, performing for the cerebellum the same office as the tentorium performs for the cerebrum; hence it is called *falx cerebelli*.

Moreover, the component fibres of the dura mater, in certain parts of its course, separate into layers, which are disposed as to leave spaces between them, for the most part of a triangular form. These triangular spaces, which are commonly termed *sinuses*, are lined by a smooth membrane perfectly analogous to that which lines the veins in the other parts of the body, and these sinuses perform the office of veins, returning the blood from all the parts of the brain to the neck. Nothing analogous to this structure occurs in any other part of the venous system. In almost every other part of the body the pressure of surrounding parts is a most important aid to these vessels in enabling them to carry on the circulation of the blood; but in the brain, the venous trunks are guarded from pressure, the dense dura mater being for this purpose stretched so tensely over them that the weight of the surrounding parts is completely taken off them.

One of the conditions essential to the performance of the functions of the brain is, that it be free from pressure. The brain is a soft substance, enclosed in a hard unyielding case. A preternatural accumulation of blood in its vessels would produce pressure upon its substance, because that substance cannot expand with any additional quantity of fluid that may be poured into it; consequently, such additional quantity of fluid would inevitably occasion a disturbance of function, if not organic injury.

The smooth surface of the brain which is exposed on the reflection of the dura mater, is formed by its second investing membrane, which is named the *tunica arachnoidea*, from the extreme tenderness and delicacy of its texture, which give it a resemblance to a spider's web. This thin, colourless and transparent membrane is spread uniformly over the surface of the brain, covering all the eminences termed convolutions (*fig. 1. 2, 2*), but not insinuating itself between any of the depressions between the convolutions (*fig. 1v. 7.*). On account of its extreme tenuity and its non-adhesion to the membrane beneath it, it cannot be easily separated from the latter; but there are situations at the basis where the arachnoid membrane, as it passes betwe-

opposite parts of the brain, can be seen distinct from the subjacent tunica.

The third investing membrane, the pia mater, derives its name, like the former, from the tenderness and delicacy of its tissue; but unlike the tunica arachnoidea, in which not a single blood vessel has hitherto been discovered, the pia mater is exceedingly vascular. The blood vessels with which every part of this delicate membrane is covered are the nutrient arteries of the brain; before they penetrate the brain these vessels divide, subdivide, and ramify to an extreme degree of minuteness upon the external surface of this membrane, so that the blood does not enter the tender cerebral substance with too great force. When a portion of the pia mater is gently raised from the brain, these blood vessels appear as exceedingly fine delicate threads, which on account of the elasticity with which they are endowed are capable of elongation as they are drawn out of the cerebral substance. As the pia mater contains and supports the nutrient vessels of the brain, this membrane is not only spread as a general envelop over its entire surface, but it penetrates between all its convolutions and lines every cavity which is formed in it.

It has been stated that the large portion of the cerebral mass, termed the cerebrum, occupies the whole of the upper part of the cavity of the cranium. The cerebrum is divided

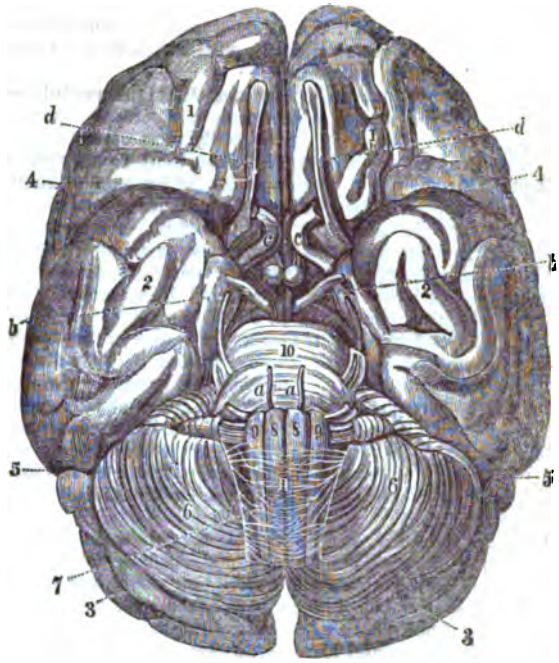


FIG. II.

[Base of the brain.]

1, anterior lobes of the cerebrum; 2, middle lobes of the cerebrum; 3, posterior lobes of the cerebrum; 4, fissure separating the anterior from the middle lobes, named the *fissura sylvii*; 5, situation of the superficial excavation forming the boundary between the middle and the posterior lobes; 6, the two hemispheres of the cerebellum composed of flattened laminae or layers; 7, the medulla oblongata, which in this position of the brain rests upon and covers the vermiform process; 8, corpora pyramidalia; 9, corpora olivaria; 10, tuber annulare, or pons varolii; 11, decussation of the corpora pyramidalia; a, b, c, d, cerebral nerves.

The whole of the external convex surface of the hemispheres is divided into numerous eminences termed convolutions, which run in different directions, and are of different sizes and lengths, in different parts of the hemisphere (fig. 1. 2). The depressions or fissures between the convolutions termed clefts, or sulci, generally penetrate the consistency of the brain to the depth of about an inch or an inch and a half (fig. iv. 7). The greater number of these pursue a zigzag course, but some run longitudinally, others obliquely; some communicate with each other, while others terminate separately in the substance of the brain (fig. iv. 7).

The nervous matter constituting the cerebrum is composed of two distinct substances, which differ from each other materially both in their colour and consistence (fig. iv. 7). The outer substance is sometimes termed *cineritious*, from its being of a greyish brown colour; at other times *cortical*, from its surrounding the inner part of the brain, as the bark the inner parts of the tree; by some it is also called *glandular*, and by others *secretory*, from the supposition that its nature is that of a gland, and that it secretes a peculiar fluid. It is of a softer consistence than the inner part, and leaves by desiccation a smaller quantity of solid residuum. It is composed almost entirely of blood vessels connected and sustained by exceedingly fine cellular membrane. Its structure is uniform throughout, presenting no appearance whatever of a fibrous texture. It gives to the entire surface of the cerebrum an external covering, generally about the tenth of an inch in thickness (fig. iv. 7).

The inner substance, termed *white or medullary* (fig. iv. 7), is firmer in consistence and larger in quantity than the grey matter; and when an incision is made into it, its surface is spotted with red points, the cut orifices of its vessels, which vary in number and size according as they may be more or less distended with blood. It is now universally agreed that this part of the brain is composed of fibres. When examined in its recent and most perfect state, especially after it has been artificially hardened and condensed by the action of heat or certain chemical substances, if it be carefully scraped with a blunt instrument, these fibres become perfectly distinct and are of considerable magnitude, with furrows between them, which for the most part are placed in such a direction as to converge towards the base of the brain (fig. iv. 6, 5. 4). The fibres do not merely unite, forming what are called *commiss.*

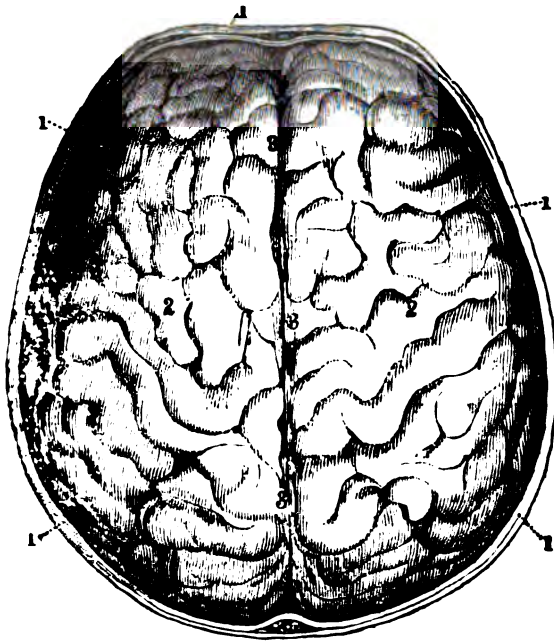


FIG. I.

[Upper surface of the brain.]

1, cut edge of the bones of the cranium; 2, superior convex surface of the two hemispheres of the cerebrum with their convolutions; 3, separation between the two hemispheres of the cerebrum occupied by the *falx cerebri*.

into two equal lateral halves termed hemispheres (fig. 1. 2), which have an ovoid figure somewhat resembling an egg cut longitudinally into two equal parts. The hemispheres are separated from each other by the membrane already described, the *falx cerebri* (fig. 1. 3); and their inner sides, in apposition with the *falx*, are flattened, while their upper and outer surfaces are convex, being accurately adapted to the concavity formed by the inner surface of the bones of the cranium.

Each hemisphere is subdivided into an anterior, a middle, and a posterior lobe, but it is only on the under surface of the brain that these lobes are accurately defined (fig. 11. 1, 2, 3). The anterior and middle lobes are separated from each other by a deep fissure, named the *fissura sylvii* (fig. 11. 4), which extends obliquely backwards from the basis to a considerable depth between the convolutions; but the middle is distinguished from the posterior lobe, not by a fissure but by a superficial excavation on the under surface of the posterior lobe (fig. 11. 5). The anterior lobes rest upon the orbital plates of the frontal bone; the middle lobes are lodged in the temporal fossae formed by the sphenoid and temporal bones, while the posterior lobes are supported upon the tentorium.

ures, but they actually cross each other and pass into the opposite sides of the body. This decussation of the medullary fibres has been demonstrated in the most satisfactory manner by Drs. Gall and Spurzheim.

It is now very generally admitted that the medullary substance of the brain is the true and proper nervous matter, or the nervous substance in its most perfect state; that the grey matter is entirely subservient to it, and is indispensable, if not to its generation, at least to its nutriment and support. Drs. Gall and Spurzheim indeed maintain that the sole use of the grey is to form or secrete the medullary matter; and this opinion they ground, first, on the fact, that whenever the medullary matter is obviously to be increased, it is invariably surrounded by a mass of grey matter, which incloses it as in a bed or nucleus; and, secondly, on this further fact, that in the course of the spinal cord, wherever it sends off nerves, masses of grey matter are always accumulated. Professor Tiedemann, who disputes the correctness of the opinion of these physiologists, on the ground that in the fœtus the medullary is formed before that grey substance, thinks nevertheless that the use of the grey substance is to convey the arterial blood which may be necessary to support the energy of the perfect nervous matter.

It is not intended, in this article, to pursue further the dissection of the cerebrum in the mode usually adopted by anatomists, both because the description could not be followed unless the object were before the eye, while that description, if needed, can be easily obtained in the common anatomical books; and because however convenient such a mode of examining the organ may be for the purpose of ascertaining its healthy or diseased conditions, it affords no insight into its real structure.

The *cerebellum* is situated at the basis of the cerebrum, towards its posterior part (fig. 11. 6, 6). Its form is elliptical, its largest diameter extending transversely from one side to the other (fig. 11. 6). Like the cerebrum, it is divided into two lateral halves or hemispheres (fig. 11. 6), which are separated by the *falx cerebelli*. In the centre of its upper surface there is a distinct prominence termed the *vermiform process* (fig. 11. 7), which may be considered as the fundamental part of the organ, because in the lower animals, whatever other parts of the cerebellum are absent, this is invariably present, affording thus the nucleus or rudiment of the organ, from which, by the addition of other parts, as the hemispheres or lateral lobes, &c., the more perfect organ of the higher animal is built up.

The external surface of the cerebellum is divided into flattened strata or layers (fig. 11. 6), separated by fissures which correspond to the clefts or sulci between the convolutions. The *pia mater*, bearing the nutrient arteries of the cerebellum, passes between every one of these fissures; while the *arachnoid membrane* is simply extended over them. If a vertical section be made through either he-

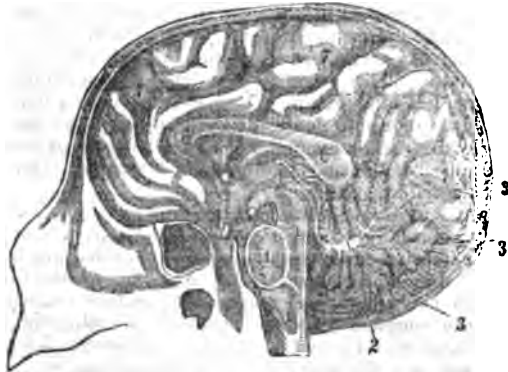


FIG. 111.

[Vertical section of the brain.]

1, bundles of medullary fibres in the central part of the nervous apparatus; 2, white matter forming the centre of the fundamental part of the cerebellum; 3, vertical section of the cerebellum, showing the arborescent arrangement of its component laminae, and forming the appearance called *arbor vitæ*; 4, situation of the third ventricle; 5, fibres of white matter, forming the *septum lucidum*, the medullary layer which separates the two lateral ventricles from each other; 6, fibres of white matter, forming the *corpus callosum*, immediately beneath which are situated the lateral ventricles; 7, convolutions of the cerebrum.

hemisphere of the cerebellum, a thick mass of white substance is seen in the centre, which, as it divides into the several

strata, presents an arborescent appearance commonly denominated the *arbor vitæ* (fig. 111. 3). These strata diverge towards the circumference of the cerebellum, and are covered externally by grey substance (fig. 111. 3).

In front of the cerebellum is placed a large mass of nervous matter, forming a very considerable eminence, commonly termed the *tuber annulare*, or the *pons varolii* (fig. 11. 10). The external surface of this body is convex, and it is divided into two lateral halves by a middle groove (fig. 11. 10). It is joined to the cerebrum by two thick white cords named the *crura cerebri*, and to the cerebellum by two similar cords named the *crura cerebelli*. The *crura cerebri* are continued (from the tuber) outwards and forwards to the under and middle part of each hemisphere of the cerebrum, in which they are lost. In like manner the *crura cerebelli* are continued outwards and backwards into the hemispheres of the cerebellum, in which they terminate.

The *medulla oblongata* is that portion of the cerebral mass which intervenes between the *tuber annulare* and the *foramen magnum* (fig. 11. 7): beyond the *foramen magnum* it takes the name of spinal cord. On the anterior surface of the *medulla oblongata* there are four eminences contiguous to each other (fig. 11. 7). The two internal are named *corpora pyramidalia*, or the *pyramids* (fig. 11. 8); and the two external the *corpora olivaria* (fig. 11. 9), or the *olivary bodies*.

If the membranes which invest the *medulla oblongata* are carefully removed, and its middle groove be gently drawn asunder, there will be discovered four or five bands of white substance ascending obliquely from one side of the *medulla* to the other (fig. 11. 11). These bands on each side decussate, some of them passing above and others below those of the other side, so that they are interwoven like plaited strata (fig. 11. 11). These bands are named the *decussating bands* of the *corpora pyramidalia*, and their decussation is conceived to explain the phenomenon familiar to the physician and surgeon, that when injury is done to one side of the brain, the consequent disturbance of function is manifested on the opposite side of the body.

Taken as a whole, the nervous mass constituting the brain is strictly symmetrical, that is, the different parts of which it is composed are so arranged, that if the organ is supposed to be divided into two lateral halves by a plane passing perpendicularly through its centre, the parts placed on each side of this plane have a perfect correspondence with each other, and form in fact reduplications of each other (fig. 11). The principal parts of the cerebral mass are the double, but they are all united on the median line with their fellows of the opposite side. This union is effected by medullary bands of various sizes, and figures which pass from one to the other, called *commissures*. Thus the double parts of the cerebellum are united by means of the large mass of cerebral matter already spoken of under the name of *tuber annulare* or *pons varolii* (fig. 11. 10). The hemispheres of the cerebrum are united chiefly by a broad expansion of medullary matter, which extends transversely across from the bottom of one hemisphere to that of the opposite side, called the *corpus callosum*, or the *great commissure* of the brain (fig. 111. 6, 6). There are other connecting bands of smaller size, by which minor portions of the cerebral mass are placed in communication, into a description of which it is not necessary to enter here.

The cerebral parts are separated from one another at certain places, and the intervals form cavities which are termed *ventricles*. Of these ventricles there are commonly enumerated four, all of which are in communication with each other. By far the largest of these are the two great cavities called the *lateral ventricles*, which are situated in the interior of the hemispheres of the cerebrum. Commencing in the fore part of the anterior lobes, these cavities proceed backwards in a direction parallel to each other through the middle into the posterior lobes. Their figure is winding and exceedingly irregular, and they are separated from each other by a tender mass of medullary matter termed the *septum lucidum* (fig. 111. 5). They are lined throughout by a fine transparent membrane, which secretes a fluid that keeps them moist, gives them a bright polished appearance, and prevents them from uniting. This membrane is the *pia mater*, which is continued from the external surface of the brain into these interior cavities, and as anatomists describe the *arachnoid membrane* as accompanying the *pia mater* in all its course through the ventricles.

The middle or third ventricle is a vertical fissure between

the two large convex eminences called the thalami optici (*Fig. III. 4*), situated in the middle and back part of the lateral ventricles. The fourth ventricle, called also ventricle of the cerebellum, is a cavity of considerable extent, situated between the cerebrum, the tuber annulare, and the medulla oblongata.

It is not necessary to enter into a more minute description of the several parts of the cerebral mass; but it is indispensable to a clear conception of the organization of the brain that something should be understood of the course of the fibres that constitute the main part of the medullary substance. For a detailed account of the course of these fibres, the reader is referred to the admirable work of Drs. Gall and Spurzheim, entitled *Recherches sur le Système Nerveux en général, et sur celui du Cerveau en particulier* in which the direction of the cerebral fibres is not only minutely and exactly described, but illustrated by excellent drawings as large as the objects. Some idea

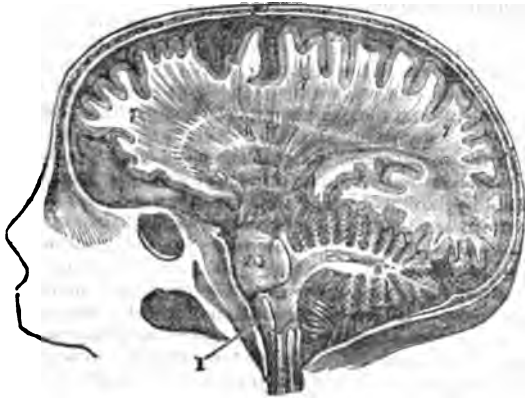


FIG. IV.

Course of the fibres of the brain.]

1, entrance of the anterior pyramids into 2, the tuber annulare, or pons varolii; 3, fibres of the pyramids much increased as they issue from the tuber annulare; 4, 5, continued increase in the fibres of the pyramids as they advance onwards towards the convolutions; 6, divergence of the fibres of the pyramids; 7, convolutions of the cerebrum, showing their depth, their grey matter, and the sulci between them; 8, cerebellum

may be formed of the course of the fibres from *Fig. IV.*, taken from a smaller work by Dr. Spurzheim. Let us follow the course of some of these fibres; those, for example, that compose the pyramids (*Fig. II. 8*, and *Fig. IV. 1*), and trace them from the medulla oblongata to the convolutions of the cerebrum (*Fig. IV. 7*). Immediately before their entrance into the tuber annulare, the pyramids are a little contracted (*Fig. II. 8*). As soon as they enter this mass, the pyramids are divided into innumerable bundles of fibres (*Fig. IV. 2*), which are covered by a thick layer of transverse fibres (*Fig. IV. 2*) that come from the cerebellum (*Fig. IV. 8*). These fibres of the pyramids, thus increased in number, ascend and receive at every point of their course fresh accessions, until at their exit (from the tuber) forward and outward, they form at least two-thirds of the crura cerebri, as is seen at *Fig. IV. 3*. Followed in their course forwards from *Fig. IV. 3*, they are manifestly increased at every point by the accession of infinite numbers of fibres (*Fig. IV. 4*). At the point (*Fig. IV. 5*) the fibres, now exceedingly numerous, manifestly assume a diverging course, proceeding in every direction forwards, upwards, laterally, and backwards (*Fig. IV. 5, 6, 7*). At length the radiating fibres, crossing and interlacing each other in all directions, form an expansion or tissue, which being folded in various ways and covered with grey matter constitute the convolutions (*Fig. IV. 5, 6, 7*). Thus the pyramids progressively increased and developed form a large portion of the anterior and middle lobes of the cerebrum. If the corpora olivaria (*Fig. II. 9*) were traced in like manner, they would be found to form the posterior lobes of the cerebrum; and the origin and course of the fibres constituting the main bulk of the cerebellum can be demonstrated with the same clearness and exactness.

From the preceding account of the structure of the brain, which shows it to be an exceedingly complex organ, it might have been inferred from analogy that it would receive a large supply of blood; but the quantity actually sent to it is far greater than any analogy could have led us to suppose. Haller made a calculation, from which he concluded

that one-fifth of all the blood sent out of the left ventricle of the heart is carried to the head, yet the weight of the brain in the human subject is not more than one-fortieth of that of the whole body. Even if this estimate, which is generally thought too large, be reduced to one-tenth, according to the idea of *Monro*, it will still leave a very great over-proportion. There is no part of the structure of the brain more curious than the various contrivances connected with the circulation through the head, which have for their object the prevention of this prodigious quantity of blood from producing any injurious effects upon the tender cerebral substance, whether by its pressure, or by its unequal distribution, in consequence of its stagnating in the vessels, or of its being too violently propelled against them. Many conjectures have been formed respecting the object of furnishing this organ with such an extraordinary quantity of blood; but nothing is really known of the use to which it is applied, through it may be admitted to give a degree of plausibility to the opinion that the brain has some analogy to a secreting organ. Without doubt, one use both of the ventricles and the convolutions is to afford a more extended surface by which the blood vessels may enter the cerebral substance at a greater number of points, and consequently in small quantity at any one point, while at the same time they are more firmly supported in their passage by the greater quantity of investing membrane with which they are supplied.

The cerebral substance, when examined by a powerful microscope, is found to be composed of a pulp containing a number of small particles or rounded globules. The pulp itself appears to consist of flocculi, likewise formed of globules, connected together by fine cellular substance, the ultimate globules being of a tolerably firm consistence and about eight times less than the red particles of the blood. These observations, which were first made by *Prochaska*, have been confirmed in the essential points by the still more recent and elaborate examination of the *Wenzels*, who by using higher magnifiers detected more clearly the constitution of the brain as composed of a series of these small globules, which were apparently of a cellular texture, and which constituted the whole solid mass of the organ. *Bauer* states that the globules are disposed in lines so as to give the brain its fibrous appearance; that the diameter of the globules varies from $\frac{1}{16}$ to $\frac{1}{32}$ of an inch, the general size being $\frac{1}{16}$; that they are both larger and in greater proportion in the medullary than in the cineritious substance, and that they are connected together by a peculiar gelatinous matter.

Chemical analysis shows that the medullary matter consists of a peculiar chemical compound, unlike any other of the constituents of the body. In some respects this compound resembles a saponaceous substance, being miscible with water, and forming with it an emulsion which remains for a long time without being decomposed. *Vauquelin* has found in it two species of adipose or adiposorous matter, soluble in alcohol; also the peculiar animal principle called osmazome, together with a quantity of albumen, a small quantity of phosphorus, and some saline matter, consisting principally of the phosphates of lime, soda, and ammonia.

Such is a brief outline of the nature and relation of the principal parts that enter into the composition of the brain. The functions of this organ will be considered in connexion with those of the spinal cord, and of the nerve. [NERVOUS SYSTEM.]

***BRAIN OF ANIMALS, its peculiarities and diseases.** The most obvious distinction between the brain of man and that of the other mammalia is its diminished size in most of the latter. The moment the skull-cap is raised, the difference between the full rounded appearance of the former and the compressed flattened shape of the latter cannot fail to be observed. The convexity of the middle lobes is strangely lessened, and the posterior lobe is in a manner lost in quadrupeds. If the brain is now removed from the cranial cavity, the difference in bulk between that of man and the inferior animals is strikingly displayed. The brain of the ox scarcely weighs a pound: the average weight of the brain of the human being is more than 2½ lbs.

In man the brain is supposed to constitute about 1/35th part of the weight of his body. In the dog, averaging the different breeds, it is 1/120th part; in the horse it is only the

* As the reader may perceive some discrepancies between the two articles on the Brain, it is necessary to remark that these articles contain the respective views or opinions of two different writers.

450th part, in the sheep the 750th part, and in the ox the 800th part. Does there appear already a connexion between the relative bulk of brain and the quantity of mind? The bulk of the brain has alone been spoken of, but, in point of fact, these animals have just been ranged in the order of their intelligence and docility.

The prominences and depressions which mark the surface of the brain in man, and which are supposed by phrenologists to indicate certain peculiarities of mind and disposition, are tame and inexpressive in the quadruped. They are not found in the hare, or the rabbit, or in the rodentia generally. They are not so bold or so deep in the ox as in the horse; nor so much so in the horse as in the dog.

The brain is composed of two substances essentially distinct from each other, the medullary deep in the base of the organ, and the cortical or cineritious without: the one connected with the animal, and the other with the intellectual principle: the one the medium through which the impression made by surrounding objects is conveyed, and the other the substance to which that impression is referred, and where it is received, registered, and compared: the one the agent by means of which the voluntary motions of the frame are effected, and the other directing and controlling the working of the machine.

As an illustration of the greater size and development of the nerves of sense in animals, the olfactory one may be selected. In man, who has other means of judging of the qualities of his food, and of surrounding objects, than by the sense of smell, the olfactory nerve is not one-fourth of the size of that of the horse; in the ox, that is not so much domesticated as the horse, and oftener sent into the field to shift for himself, it is considerably larger; it is larger still in the swine, who has to search for a portion of his food buried in the earth, or deeply immersed in refuse or filth; and it is largest of all in the dog, whose acuteness of scent renders him so useful a servant to man.

The different development of the medulla oblongata in different animals may be adduced as another proof of the admirable adaptation of each to the situation which he occupies and the functions which he discharges. The medulla oblongata is the prolongation and condensation of the medullary matter of the brain, and it is the origin of that portion of the spinal cord which is devoted to organic life. In the human being the breadth of it is only a seventh part of that of the brain; in the horse and the ox it is nearly a third; and in the dog it is more than a half.

In every part of the brain of the quadruped the medullary portion preponderates, and the cineritious is deficient. In his wild state the brute has no idea beyond his food and the reproduction of his species: in his domesticated state, he is the servant of man. The acuteness of his senses and the preponderance of animal power qualify him for this service; but were proportionate intellectual capacity added, he would speedily burst his bonds. It is, however, only in the proportions of the two substances that the brain of the biped and of the quadruped differs: the cineritious and the medullary parts are found in each. It was necessary that in the servant of man some degree of intelligence should be added to animal power; that he should possess the faculties of attention, memory, and judgment, and that to these should be added not only the germ, but, often, the pleasing development of courage, fidelity, gratitude, disinterestedness, and a consciousness of right and wrong.

In the smaller quadrupeds the comparative size of the brain approaches nearer to that of the human being. In the mouse it is a forty-third part of the weight of the animal. But of what is it composed? Of the medullary matter which is necessary to form the origin of the nerves of pure sensation, and of those of the spinal cord, which are as numerous as in a larger animal. This must necessarily occupy a considerable bulk; but there is little of the cineritious matter, or that which is connected with the mind.

For several minor points of difference between the brain of the biped and the quadruped, the reader is referred to Coulson's edition of 'Blumenbach's Comparative Anatomy,' and to Dr. Grant's 'Outlines of Comparative Anatomy.'

The brain of the larger birds agrees with that of the mammalia in the smallness of its bulk, compared with the development of the same organ in the human being. The brain of the eagle is not more than a two-hundred-and-sixtieth part of the weight of the bird. The brain of the goose is not more than a three-hundred-and-sixtieth part

of some of the lesser birds, as in the chaffinch and the

redbreast, it approaches to the proportionate size of that of the human being, it is, as in the smaller quadruped, an account of the quantity of medullary matter required for the origins of the nerves; and the cineritious matter forms only a very small part of the brain. The brain of the bird has no convolutions on its surface; no corpora striata in the ventricles; no pons varolii between the brain and the spinal cord; and the origins of the optic nerves are separate from the brain, and lie behind and below it.

In fishes the brain is yet more diminished in proportionate size. In some species it does not constitute a two-thousandth part of the bulk of the fish. It scarcely fills the cranial cavity, but is surrounded by a cellular tissue containing a transparent semifluid mass. It singularly varies in different species. It consists of at least four or more rounded eminences, placed in pairs opposite to each other, and forming two parallel lines; and there is often only a very slight connexion between these lines, or the eminences of which either of them is composed. The two principal hemispheres of the brain and the optic thalamus are always present. The olfactory nerves often form a third pair of tubercles anterior to these and the cerebellum, and is always found posteriorly on the mesian line. The optic nerves usually cross each other without any intermingling of medullary matter. The cineritious substance is found in an exceedingly small proportion in the brain of fishes.

As for insects and worms, little needs to be said here. In the worm the brain or upper ganglion of the nervous system is placed near to, or may be said to be perforated by, the superior portion of the œsophagus, and thence proceed little white threads or cords, which run along the course of the digestive canal. In insects, the upper ganglion usually surrounds the œsophagus, and a ganglionic system of nerves can generally be traced proceeding from it. In the larger of insects the brain is inclosed in a horny cavity. The spinal cord proceeding from it, pursues its course through the whole of the abdomen, presenting evident ganglia at different points, from which nerves are distributed; while from the intermediate spaces are given out other nerves without ganglia; presenting a rude but satisfactory sketch of the combined systems of sensitive and motor nerves discovered by modern physiologists.

A sketch of the diseases of the brain in different animals can, in this place, scarcely extend beyond those that have been domesticated by man. The preponderance of the medullary matter explains the cause of the unfrequency of any affection of the brain that can be called insanity in animals. If there is so small a portion of cineritious matter, if the intellectual principle is so slightly developed, a perversion of the mind is scarcely to be expected. In certain states of cerebral excitation, delirium is occasionally observed. It is one of the concomitants and characteristic symptoms of rabies. Pure mental alienation unaccompanied by inflammatory or other disease is however, although very rarely, seen in the quadruped. The eagerness with which the female, the sow, the bitch, the rabbit, or the cat, will search out and pursue their own offspring in order to destroy them, and the evident delight with which they devour them, is not this insanity? The fury with which some animals, gentle in every other respect, show at the sight of one object, and one alone, is not this true monomania? A mare that had not the slightest fear of any other object, was always roused to uncontrollable fury by the sight or rustling of paper; another mare would endeavour to fly upon and tear to pieces every light grey horse that came within her view; and a third would rush furiously against every white object, animate or inanimate;—were not these cases of monomania?

The brain of the quadruped is proportionally much smaller than that of man. Comparing bulk with bulk, the brain of the horse is not a twelfth, and that of the ox is not a twentieth part so large as that of the human being. In a state of health, a much greater quantity of blood is determined to the brain than to any other part, in order to enable it to discharge its important functions. From some sudden disturbance in the circulation, a still greater quantity of blood is sometimes determined to the brain of the human being. What is the consequence? All the vessels of that organ are overloaded—the origins of the nerves are pressed upon—no cerebral functions can be discharged—the man is seized with a fit of apoplexy, and unless the current is speedily diverted, and the overloaded vessels to a certain extent drained of their contents, he must inevitably

pena. From some exciting cause, the same determination of blood to the brain takes place in this case; but his brain is not, proportionally, a quantitative part so large as that of the human body, and it is altogether unable to resist the impetus—the functions are suspended in a moment, and the animal drops and dies. They swoon and the loss—when the former often sustains from this cause. He has been preserving his sheep and his oxen for the market more eagerly and healthily than provisions would warrant. They have more under the influence of a stimulating and forcing system, and they are covered with fat and full of blood. They are indisputably put on a still more stimulating regimen; they are turned into more frugal pastures, so they are driven in the turnip-field. They have not been there many hours before one and another begins to leave suddenly at the flanks—the head is extended, the eyes are protruded, and the animal falls, struggles for a few moments, and perishes. The flock or the head of the farmer has occasionally been devastated in this way.

Thousands of horses used to be lost from a similar cause. From exciting the labour of this animal during too many successive hours, and then suffering him to purge himself at his will, stupors prevailed to so dreadful an extent that whole establishments were swept away at once. The hours of labour were shortened where this could be effected, and the use of the mowing was discontinued; a little more strength was paid to the horse when he came home, and the disease was rarely seen except from some evident mismanagement. A complete cessation of frequent occurrences among horses. It sometimes rages like an epidemic through the poultry. Poultry of all kinds, and several kinds, are continually falling young to it. Without the slightest warning they drop from their perches and die. Although every attention is paid to the quantity and the kind of food, conditions of the birds, and number of the quarters that are in the ownership belonging to the Zoological Society of London, perish from determination of blood to the head. It is an argument of the small portion of circulatory matter in the brain, that the intellect is so little deranged in the diseases of quadrupeds. There are few cases of intense fever, in which the mind of the human being does not occasionally wander; but, with the extension of phrenology—the inflammation of the brain with its membranes—and the peculiar aberration of mind which characterizes rages, delirium is rarely observed in any of the maladies of horses. The intellect may be extinguished at once, as in apoplexy; but there is not sufficient of it to permit the frequent and violent agitation of it which is often observed in man.

It is probably owing to the comparatively small bulk of brain, and the sensibility and delicacy of that which is given to them, that locomotives is of such antecedent weakness in young animals. It is observed in the calf at the moment of its birth, and has been seen in the fetal calf, but then both the mother and her progeny were weakly. There is scarcely a case upon record in which it has afterwards been produced by the cause to which it is traced in the human infant. [DIPLOMATISTS.]

On the other hand, the brain of the quadruped, and particularly that of the ox and the sheep, is often debilitated by rickets, which produce effects similar to dropsy in the head, and are quite as fatal. Yearling rattle and sleep are its signs, to separate themselves from their companions, holding their heads a little on one side, and turning round and round in the direction in which the head is inclined; they then stand still for a while, stupid and lost, until, suddenly starting, they either resume again their circular motion, or gallop over the field as if they were pursued by some wild beast. They neglect their food, or become unable to feed, and readily pine away and die. On examination after death an abscess, and occasionally several of them, are found lying on the brain between its membranes, by their pressure causing absorption of a portion of the brain, and producing all the derangement. This disease is very fatal; no fewer than 600,000 sheep are supposed annually to be destroyed by it in France; it is, however, only in young and weakly animals that it usually occurs. [MEDICINE.]

The other diseases of the brain are considered under their respective names; but it was deemed useful, when describing the possibilities of this important organ in different animals, to give a brief sketch of the necessary influence of these possibilities on the character, progress, and termination of disease.

BRAMANTE IN EGYPT. [MUSEUM.]

BRAMANTE. [MUSEUM.]

BRAMANTE, a genus of fishes of the order Acanthopterygii and family Sparacanthidae. General characters:—Dorsal, anal, and ventral fins none or less well; body much compressed, somewhat ovate when viewed laterally; the head convex obtusely terminated; snout, when short, almost vertical; teeth slender, placed both in the jaws and palatine; leucostichous eyes seven. But one species of this genus is known, *Brama Ram*. M. Cuvier mentions the Mediterranean as the most local for this fish; but at the same time he says that it occasionally wanders into the ocean. It appears, however, that it is not so local as M. Cuvier supposes, numerous specimens having been found in different parts of our own coast.

Brama Ram measures from about one to two feet in length; it is of a deep blue colour, becoming silver towards the belly. The dorsal fin has thirty-four rays, and the anal thirty. The tail is large and forked; pectoral fins rather long and narrow; ventral fins small; the scales extend as far as the jaws.

BRAMANTE, DURBINO, or BRAMANTE LAZZAROLI, was one of the most eminent men in his profession at the time of the so-called revival of the arts in the fifteenth century; when he distinguished himself by a more accurate investigation of antique buildings than had before been adopted, thereby contributing to no small degree towards establishing that system of architecture which, founded upon the application of the Roman orders, prevailed to this day in classical and within a short time entirely superseded every other mode of building that had previously obtained in Italy. Assisted by the circumstances of the times, almost as much as by his genius, his diligence earned for him a reputation which certainly appears quite adequate to his various merits. His name also derives some renown from being associated with those of Raphael (his scholar) and Michael Angelo, but only as that of their immediate professor; but for the management he gave to the talents of the one, and the degree of rivalry which existed between himself and the other.

According to some, Bramante was born at Castel Durante, in the duchy of Urbino; according to others, at Peruginum in the same state, in 1444, the same year in which Filippo Brunelleschi (the architect of the then unrivalled cupola of the cathedral at Florence) died. Although in very supple circumstances, his family appears to have been respectable; and as he very early evinced a natural aptitude for drawing, his father placed him under the celebrated artist Fra Bartolomeo of Urbino. The proficiency he attained in the part of his career is evinced by many pictures which he executed, and which are still to be seen at Milan; but his predilection for architecture prevailed over all other considerations, and he abandoned his art the soon when he had already a fair prospect of success in the latter.

At first he travelled through Lombardy and passed some time at Milan, studying the works and constructions of the celebrated master in that city, which was the most extraordinary work of architecture then in progress. He next proceeded to Rome, where after painting some frescoes (now destroyed) in the church of St. John Lateran, he determined to apply himself exclusively to investigating and measuring the principal ancient edifices in that metropolis and its environs. He soon became completely engrossed by his new pursuits, being incessantly occupied in making drawings, sketches, and measurements of various works of antiquity. Among other edifices which he explored were the ruins of that prodigious pile, or rather collection of buildings, the Villa Adriana, which, not having been then despoiled of her columns, marbles, and other ornaments since carried off, must have been far more instructive to the student than at present, when its costly remains are interesting only to the antiquary. Unfortunately Bramante's zeal and admiration do not appear to have been regulated by that discriminating taste which shows that it appreciates real beauties, by rejecting all spurious alloy. Amplitude of masses and vastness of plan seem to have struck the imagination of the future progeny of St. Peter's quite as forcibly as that architectural dignity which is independent of extraordinary dimensions, springing rather from boldness and grandeur of manner consistently kept up throughout.

After examining his resources as far as Naples, upon his return to Rome he was commissioned by Cardinal Oliviero Caraffa to erect the tabernacle of the convent della Pace; which, although not a work of very particular merit for its

design, gave such satisfaction as to bring him at once into notice, and obtain for him the patronage of Alexander VI. Under that pope however he did not execute any public works of importance, with the exception of the Cancelleria or palace of the chancery; a pile of imposing magnitude, and remarkable for its spacious *cortile*, surrounded by open galleries formed by ranges of arches resting upon granite columns. Although such a combination of the column and arch constitutes in itself a mixed style, as it was here managed by Bramante it is at least free from absurdity, for he suppressed all appearance of entablature, and made his arches spring immediately from the abaci of the columns, which with the capitals may be considered as the imposts surmounting circular instead of square piers: whereas blocks made to resemble pieces of an entablature not only cause the supports to look too much as if built up of fragments, but call attention still more forcibly to the inconsistency of the two systems of architecture, by exhibiting the horizontal members, which columns were originally intended to support, so mutilated as to destroy all idea of connexion in a horizontal direction. We may therefore so far allow that Bramante proceeded upon rational principles, and likewise that he consulted effect no less than propriety; the mode adopted by him being more satisfactory to the eye as well as to the judgment. In the façade of the same building, which has two orders of pilasters above a lofty rusticated basement, he was not so happy; and he either did not aim at the character of the antique, or else failed in his attempt. In proportion to the building the orders are too minute to assist the idea of magnitude otherwise than at the expense of their own importance. There is magnitude in the general mass, but not in the constituent features. The arrangement of the pilasters again is more unusual than agreeable, for they cannot be said to be coupled, but distributed so as to form wider and narrower intercolumns alternately: in the former are placed the windows, while the others are left blank—a mode which, without possessing the richness of coupled columns or pilasters, is equally if not still more objectionable than they are. Another circumstance which does not contribute greatly to beauty is, that the windows of the principal floor as those of the basement are arched, although crowned by a horizontal cornice, owing to which they have a heavy look in themselves, and also appear squat and depressed in comparison with the range above them. Nearly the same peculiarities, which may be taken as in some degree characteristic of Bramante's style in buildings of this class, prevail also in the façade of a palace begun, although not finished by him, in the street called Via Borgo Nuovo. This mansion, now called the Palazzo Giraud, has like the Cancelleria two orders of pilasters, forming narrow and wide intercolumns alternately, and arched windows to the first order, crowned by a horizontal frieze and cornice, but with these differences, that the lesser intercolumns are narrower than in the other instance, although still of too great width to allow the pilasters to be termed 'coupled'; and the arched windows are there wider and loftier than the others.

The elevation of Julius II. to the pontificate was a fortunate circumstance for Bramante; for that pope, who was no less enterprising and resolute in civil than he was in military undertakings, was ambitious of signalizing his reign by some noble monuments of architecture and the other arts. By him Bramante was commissioned to project plans for uniting the Belvedere with the buildings of the old Vatican palace, so as to render the whole, if not a coherent pile of regular building, at least an imposing mass. The architect accordingly proposed to connect the two together by means of long wings or galleries, between which should be a court. On account of the inequality of the ground, this latter was formed on two levels, with flights of steps leading up to the large niche or tribune of the Belvedere. The design of this tribune, within which were five lesser niches containing the group of the Laocoon and other master-pieces of sculpture, may be seen (very rudely expressed) in Serlio's work on architecture; where is likewise shown part of one of the galleries or loggias—the same that was copied by Sir Robert Taylor for the wings of the Bank of England as they existed previously to the late alterations. This grand composition, which however was not completed by Bramante himself, has since his time undergone so many extensive changes, that it is impossible now to judge from the place what it originally was; for the court has been divided into two by a range of buildings across it, at the junction of its two levels, which was erected by Sixtus V. for the Vatican library.

Complying with both the pope's impatience and his own. Bramante carried on the works at the Vatican with all possible dispatch, by night as well as day, in consequence of which precipitation many fissures afterwards discovered themselves. To reward the zeal and assiduity of his favourite architect, Julius conferred on him the office called *del Piombo*, took him along with him in his military expeditions as his chief engineer, and otherwise manifested the confidence he placed in him. The credit he was in with the pope enabled him in time to patronise others, and he enjoys the honour of having been the first to recommend Raphael at the papal court; yet he has also been accused of availing himself of his interest with Julius for the purpose of thwarting the views of Michael Angelo. Certain it is that he persuaded the pope to abandon the idea of the vast mausoleum which was to have been ornamented with forty statues by that artist, some of them of colossal size; and also that he recommended him to employ Michael Angelo preferably in painting the Sistine-chapel: yet that he should, as some have conjectured, have suggested the latter undertaking in the hope that it would prove a failure, is hardly credible.

At least he had no very particular reason to be dissatisfied with the scheme of the mausoleum, because it was in order to provide a suitable situation for it that Julius determined upon taking down the old basilica of St. Peter, and erecting a new edifice, as had been intended by Nicholas V., who had actually commenced the end tribune or semicircle, which was chosen by Michael Angelo as the most fitting place for the mausoleum. Such was the origin of the present structure, called by Vasari *la stupenda e terribilissima fabbrica di San Pietro*. Giuliano di Sangallo was employed to make designs as well as Bramante, but those of the latter obtained the preference, and Sangallo felt so indignant that he retired to Florence. Bramante accordingly commenced his work in 1513, and such was the expedition with which he proceeded, that the four great piers and their arches were completed before his death in the following year. On this occasion he had recourse to a new mode of executing the ornaments of the soffits of the arches, by means of moulds fixed into the centerings of the arches, which were filled up with stucco and brickwork before the arches themselves were turned,—a mode supposed to have been practised by the ancients, although quite gone out of use until again applied by Bramante. As his labours extended no further, and as the subsequent mutations introduced by Michael Angelo and his successors were such that the original design was entirely lost sight of, the present edifice can in nowise be considered the work of Bramante. On the contrary, there is reason to imagine that it would have been a much nobler piece of architecture had his ideas been adhered to; and perhaps one of even still greater magnitude. As the work was not completed, we can only judge of his general intentions from the plan composed according to them by Raphael, which is given by Serlio in his work, and certainly, as far as plan alone goes, this appears far better conceived than the one actually executed, and superior in perspective effect, inasmuch as there would have been a greater number of arcades along the nave, and an uninterrupted vista in each of the side aisles to the very extremity of the building; besides which there would have been a spacious *præstyle* portico in front, the entire width of the church, formed by three ranks of insulated columns. Further it has been observed, that instead of appearing less than its actual dimensions, as is notoriously the case with the present St. Peter's, which even excites astonishment on that very account, it would have looked more spacious and extensive than it really was. The form of the dome too, as proposed by Bramante, would have been more simple and more after the character of the antique, it being much less than a hemisphere externally, with a series of gradini similar to those of the Pantheon at its base, above the peristyle of its tambour;—and it may here be observed, that it was Bramante, not Michael Angelo, who first projected the idea of surmounting St. Peter's by a rotunda and dome equal to the Pantheon. Another celebrated work of Bramante, although upon an exceedingly small scale, is the little Temple or Oratory in the cloister of San Pietro Montorio at Rome. It is circular in plan, and surrounded externally by a peristyle of sixteen Doric columns, above which rise the walls of the cella, forming a disproportionately lofty atrium with windows and niches placed alternately; this circumstance, together with the number of doors, windows, and

niches, gives the whole a heavy and confused appearance, utterly unlike the finished simplicity observable in the best antique models. Besides all which there is a particularly uncouth balustrade above the entablature of the peristyle, whose balusters are continued the whole circumference, without any intervening pedestals. At the best it is a more showy than beautiful architectural object; yet would have produced a good general effect, had the circular court with a surrounding colonnade, for the centre of which it was intended, been completed according to the architect's design.

Numerous other buildings and projects are attributed to Bramante, but to some of them his claims are rather disputable, and of the edifices known to have been erected by him many no longer exist. He died at Rome in 1514, at the age of 70, and his remains were interred with unusual solemnity.

BRAMBANAN, a vil. in the isl. of Java, about three m. N.N.E. from Djocjokarta in 7° 49' S. lat., 110° 25' E. long.

Brambanan contains extensive remains of Hindu temples, which occupy an area of more than seven acres. The buildings, of which these are the remains, apparently consisted of four rows of buildings, inclosing a larger structure 60 ft. high. The buildings are all constructed of hewn stone in large blocks, and are uniform in their character, each of them being of pyramidal form, and highly ornamented with sculptures. The large central building is divided into several apartments and contains numerous figures of Siva. The smaller surrounding temples are each furnished with an image of Buddha. There are four distinct entrances to the group, one facing each cardinal point of the compass; each of those entrances is apparently guarded by two colossal statues in a kneeling attitude. The interior walls are ornamented with sculptures in alto and basso rilievo; a regular design is visible throughout the whole group of buildings, which exhibit in their embellishments less of what we consider fantastic and absurd than we are accustomed to find in similar remains in the East.

It is believed that these temples were erected towards the end of the 12th or the beginning of the 13th century. (Crawford's *Hist. of E. I. Archipelago*.)

BRAMBER, a decayed vil. in Sussex, which was formerly of sufficient importance to give name to one of the six divisions of that co., to which the peculiar title of *Rape* is given. The Rape of Bramber is bounded on the N. by the co. of Surrey, on the S. by the English Channel, and on the E. and W. respectively by the Rapes of Lewes and Arundel. Its length from N. to S. is 22 m.; from E. to W. 11 m. It contains ten hund., having 31 par. in the upper division, and 11 in the lower, and comprehends the bor. of Bramber, Horsham, New Shoreham, and Steyning. The bor. of Bramber was included in Schedule A of the Reform Act, and was consequently disfranchised.

In the year 1771 some scandalous practices were disclosed, during a parliamentary investigation into the election of members for the bor. of Shoreham. It appeared that certain electors of that bor. had formed a club which they designated the Christian Society, the business of which was to sell the representation to the best bidder. The chief magistrate, who was also returning officer for the bor., was a member of the club. An act passed, disfranchising the members of the club, and extending the franchise of Shoreham to the entire Rape of Bramber, which has been perpetuated under the Reform Act, the two members for the bor. of Shoreham being elected by the qualified inh. of the Rape of Bramber. The total number of the pop. of the Rape in 1811, was 22,777; in 1831, 30,113.

The disfranchised bor. of Bramber, which is a vil. of the meanest kind, contains no other mark of its antient importance than the ruined castle of Bramber or Brembre. The castle and manor were granted in 1066 by William the Conqueror to William de Braose. They now belong to the Duke of Norfolk.

(Dallaway's *Sussex; Beauties of England and Wales; The Gentleman's Magazine*.)

BRAMBLE, a wild fruit-bearing bush, belonging to the natural order *Rosaceæ*. [*Rubus*.]

BRAMHALL, JOHN, Archbishop of Armagh, in the seventeenth century, was born at Pontefract, in Yorkshire, about the year 1593, and was descended from an antient family. He received his early education in the place of his birth, and was then sent to Sidney College, Cambridge, where he was admitted February 21st, 1608. In 1623 the Archbishop of York made him his chaplain. He was also

prebendary of York and Ripon. In 1630 he took the degree of Doctor in Divinity. Soon after he was invited to Ireland by Lord Viscount Wentworth, deputy of that kingdom, and Sir Christopher Wandesford, Master of the Rolls. There he soon obtained the archdeaconry of Meath, the best in that kingdom. In 1634 he was promoted to the bishoprick of Londonderry; while he held which, he doubled the yearly revenue by advancing the rents and recovering lands which had been detained from his predecessors.

Bramhall appears to have applied himself with about the same zeal in Ireland that Laud was then exhibiting in England for the increase of the wealth and power of the clergy. In pursuance of several acts passed in the Irish parliament, which met July 14, 1634, he abolished fee farms that were charged on church-lands; he obtained composition for the rent instead of the small reserved rents; he obtained from the Crown, and he purchased impropriations. By these and other means he regained to the Church, in the space of four years, thirty or forty thousand pounds a year. He likewise prevailed upon the Church of Ireland to embrace the thirty-nine Articles of Religion of the Church of England, agreed upon in the convocation holden at London in the year 1562. He tried also to get the English Canons established in Ireland, but did not succeed farther than that a few of them should be introduced, and other new ones framed.

On the 4th of March, 1640-1, he was impeached, together with several other of Strafford's coadjutors, by the Irish House of Commons. He was in consequence imprisoned, and after some time, through the King's interference, set at liberty, but without any public acquittal. Some time after, not considering himself safe in Ireland, he went over to England, where he remained till the battle of Marston Moor; after which, the prudent counsels, which according to his biographer he bestowed upon the Marquis of Newcastle, not being able to resist the charge of Cromwell's Ironsides, the bishop embarked with several persons of distinction, and landed at Hamburg, July 8, 1644. It was during his exile, in the company of the Marquis of Newcastle, that he had that argument with Hobbes about liberty and necessity, which gave rise to the celebrated controversy, without which the prelate's name might have perhaps been forgotten. At the treaty of Uxbridge, Bramhall had the honour to be classed with Laud in being excepted out of the general pardon.

At the Restoration, Bramhall was made Archbishop of Armagh, Primate and Metropolitan of all Ireland. He now renewed his exertions for the enrichment and aggrandizement of the Church. He died in 1663. By his wife he had four children, a son, Sir Thomas Bramhall, bart., and three daughters.

Bramhall, whatever in his day might be his reputation as a bustling and intriguing churchman, will be remembered, if he be remembered at all, by posterity on account of his controversy with Hobbes. As this controversy throws considerable light not only on the character of Bramhall but on that of his age, it is of importance to give some account of it, which will be done much better than we could do it in the following passages, with which Hobbes concludes the work. As the controversy is now very scarce, this extract, even though not viewed as by any means settling the question at rest, will scarcely be considered too long, especially when it is regarded as a specimen of the style of Hobbes. As we have already remarked, the controversy originated in a conversation at Paris in the company of the Marquis of Newcastle, while they were all living there in exile. (*Biog. Brit.* art. 'Bramhall'.)

I shall briefly draw up the sum of what we have both said. That which I have maintained is—that no man hath his future will in his own present power;—that it may be changed by others, and by the change of things without him;—and when it is changed, it is not changed nor determined to anything by itself;—and that when it is undetermined, it is no will, because every one that willeth willeth something in particular;—that deliberation is common to men with beasts, as being alternate appetite, and not ratiocination; and the last act or appetite therein, and which is immediately followed by the action, the only will that can be taken notice of by others, and which only maketh an action in public judgment voluntary;—that to be free is no more than to do, if a man will, and if he will, to forbear, and consequently that this freedom is the freedom of the man, and not of the will;—that the will is not free, but subject to change by the operation of external causes;—

that all external causes depend necessarily on the first eternal cause, God Almighty, who worketh in us, both to will and to do, by the mediation of second causes;—that seeing neither man nor anything else can work upon itself, it is impossible that any man, in the framing of his own will, should concur with God, either as an actor, or as an instrument; that there is nothing brought to pass by fortune as by a cause, nor anything without a cause or concurrence of causes sufficient to bring it so to pass; and that every such cause, and their concurrence, do proceed from the providence, good pleasure, and working of God; and consequently, though I do, with others, call many events contingent, and say they happen, yet because they had every of them their several sufficient causes, and those causes again their former causes, I say they happen necessarily; and though we perceive not what they are, yet there are of the most contingent events as necessary causes as of those events whose causes we perceive, or else they could not possibly be foreknown, as they are by him that foreknoweth all things.

‘On the contrary, the bishop maintaineth—that the will is free from necessitation, and in order thereto that the judgment of the understanding is not always *practicis practicum*, nor of such a nature in itself as to oblige and determine the will to one, though it be true that spontaneity and determination to one may consist together;—that the will determineth itself; and that external things, when they change the will, do work upon it not naturally but morally, not by natural motion but by moral and metaphysical motion;—that when the will is determined naturally it is not by God’s general influence, whereon depend all second causes, but by special influence, God concurring and pouring something into the will;—that the will, when it suspends not its act, makes the act necessary; but because it may suspend and not assent, it is not absolutely necessary;—that sinful acts proceed not from God’s will, but are willed by him by a permissive will, not an operative will, and he hardeneth the heart of man by a negative obduration;—that man’s will is in his own power, but his *motus primo primi* not in his own power, nor necessary, save only by a hypothetical necessity;—that the will to change is not always a change of will;—that not all things which are produced are produced from sufficient but some from deficient causes;—that if the power of the will be present in *actu primo*, then there is nothing wanting to the production of the effect;—that a cause may be sufficient for the production of an effect, though it want something necessary to the production thereof, because the will may be wanting;—that a necessary cause doth not always necessarily produce its effect, but only then when the effect is necessarily produced. He proveth also that the will is free, by that universal notion which the world hath of election; for when of the six electors the votes are divided equally, the King of Bohemia hath a casting voice;—that the prescience of God supposeth no necessity of the future existence of the things foreknown, because God is not eternal but eternity; and eternity is a standing now, without succession of time, and therefore God sees all things intuitively by the presentality they have in *nunc stans*, which comprehendeth it in all time, past, present, and to come, not formally, but eminently and virtually;—that the will is free even then when it acteth, but that is in a compounded not in a divided sense;—that to be made and to be eternal do consist together, because God’s decrees are made, and are nevertheless eternal;—that the order, beauty, and perfection of the world doth require that in the universe there should be agents of all sorts, some necessary, some free, some contingent;—that though it be true that to-morrow it shall rain or not rain, yet neither of them is true *determinatè*;—that the doctrine of necessity is a blasphemous, desperate, and destructive doctrine;—that it were better to be an atheist than to hold it, and he that maintaineth it is fitter to be refuted with rods than with arguments.

‘And now whether this his doctrine or mine be the more intelligible, more rational, or more conformable to God’s word, I leave it to the judgment of the reader. But whatsoever be the truth of the disputed question, the reader may peradventure think I have not used the bishop with that respect I ought, or without disadvantage of my cause I might have done, for which I am to make a short apology. *The Question concerning Liberty, Necessity, and Chance, clearly Stated and Debated* between Dr. Bramhall, Bishop of Derry, and Thomas Hobbes of Malmesbury. London, 1656, sub. fn.

The converse of the expression in Newton’s concluding Scholium—‘*Non mutua, sed Æternus*,’ &c.

BRAMINS. [HINDUS, CASTES OF.]

BRAMPTON. [CUMBERLAND.]

BRANCALEONE D’ANDALO, a Bolognese noble and count of Casalecchio, was chosen by the people of Rome as their senator in 1253, with the summary powers of a dictator. The Pope, Innocent IV., was absent at the time, and Rome was distracted by quarrels between its feudal nobles, who had fortified themselves in their respective palaces, or in some of the ancient monuments, such as the Colosseum, the tomb of Cæcilia Metella, the mausoleums of Hadrian and Augustus, &c. They had also built a number of lofty towers, from which they defied the attacks of their enemies. Each baron had a band formed of his relatives, clients, or dependants, and of hired swordsmen. These sallied frequently out of their strongholds, either to attack a rival faction, or to plunder the unprotected citizens and country people. Such was at that time the general condition, not only of Rome, but of Florence, Milan, and other great Italian cities which lived in what was called municipal independence, until the citizens, weary of this state of anarchy, resorted to the establishment of the podestà, a temporary magistrate, who was always chosen out of a foreign city or state, and who had summary powers to put down the disturbers of the public peace. The Romans styled theirs ‘Senator.’ Brancalione was a man of a stern, peremptory temper, and being a stranger had no sympathy with any of the conflicting parties. He began a war of destruction against the barons, attacked their strongholds, razed their towers, hanged them and their adherents at the windows of their mansions, and thus succeeded by terror in restoring peace and security to the city. In the numerous conflicts that took place several of the ancient monuments suffered greatly. He treated the pope with little more deference than the nobles. He summoned the haughty Innocent IV. in the name of the Roman people to leave Assisi, whither he had retired, and to return to Rome, threatening him, in case of non-compliance, with a vote from the armed citizens, with their senator at their head. The pope returned to Rome, where he died soon after 1254. The people of Rome, however, fickle as they are, were generally shown themselves in modern history, became tired of Brancalione’s severity; they revolted against him, and would have put him to death had it not been for the hostages they had given to the people of Bologna for their security. They appointed another senator, Maggi of Brescia, whom however they soon after accused of being too partial towards the nobles; and in 1257 they recalled Brancalione, who resumed his authority, which he exercised with redoubled vigour. He made war against several towns in the neighbourhood of Rome, and obliged them to submit to his authority. He threatened to destroy Anagni, but desisted from his purpose through the entreaties of Pope Alexander IV. Although that pope was the declared enemy of Manfred king of Sicily and Naples, Brancalione maintained a good understanding with the latter. In 1258 Brancalione died, much regretted by the citizens, who elected his uncle, Castellano d’Andalò, as his successor, notwithstanding the opposition of the pope. A column was raised in honour of Brancalione, with an urn at the top, in which the head of the senator was enclosed.

BRANCASTER. [NORFOLK.]

BRANCHIOPODA (Zoology). The first order of the *Entomostraca* [ENTOMOSTRACA], the sixth of the class *Crustacea* [CRUSTACEA], according to Latreille, who thus characterizes it. A mouth composed of a *labrum* (lip), two mandibles, a little tongue (*lanquette*), and one or two pairs of jaws. These crustaceans, which are for the most part microscopic, are always in motion when in an animated state, and are generally protected by a shell or crust in the shape of a shield, or of a bivalve shell, and are furnished sometimes with four, sometimes with two *antennæ*. The feet, with small exception, are entirely natatory and vary in number, some Branchiopods having only six, while in others the organs which so beautifully minister both to the circulatory system and to locomotion, amount to from twenty to forty-two, and, in some, to more than a hundred. A great portion of these animals have but one eye. The presence or absence of the mandibular palpi or feelers, successively used as a character in the larger crustaceans, being difficult of detection in creatures so minute as many of the Branchiopods are, Latreille, with good judgment as we think, depends upon the eyes, the shell, and the antennæ as the guides of his classification. In that of De Geer, Fabricius, and Linnæus, the genus *Monoculus* (Linn.) appears

have been the only representative of the order. Latreille proposes the following arrangement.

Section I.

LOPHYROPA.

Feet never more than six, the articulations more or less cylindrical or conical, and never entirely lamelliform or foliaceous. The Branchiæ are not numerous, and there is but one eye. Many have the mandibles furnished with a palpus or feeler, and though M. Straus attributes this organization exclusively to the genera *Cypris* and *Cytherina*, which compose his order of *Ostrapoda*, the elder Jurine and M. Ramdhor have shown that it is also characteristic of *Cyclops*. The antennæ are almost always four in number and serve for locomotion. Three groups are arranged under this section.

CARCINOIDA.

Shell more or less ovoid, not folded so as to convey the idea of a bivalve, but leaving the lower part of the body uncovered. The antennæ never in the form of ramified arms. Feet ten, more or less, cylindrical or setaceous. Females carrying their eggs in two external bags situated at the base of their tail. Some of this division have two eyes, but the genus *Cyclops* has but one.

a.

Two eyes.

Shell entirely covering the thorax. Eyes large and distinct. Antennæ intermediate, terminated by two bristle-like appendages.

Under this subdivision Latreille places the genera *Zoea* (Bosc), *Nebalia* (Leach),* and *Condytura*† (Latreille). As our limits will not permit us to describe and figure more than one genus of each group, we select the first as an example. Latreille considers the genus *Nicotthoe* of Audouin and Milne Edwards to belong to the *Pæcilopoda* [PÆCILOPODA], remarking at the same time that the feet, with the exception of the anterior ones, resemble much those of *Cyclops*, and that the females also, like those of the *Cyclops*, carry their eggs in two little bags situated at the base of the tail.

Zoea (Bosc) has the eyes very large, entirely exposed, and is furnished with processes in the shape of horns upon the thorax. The following is Bosc's description of *Zoea pelagica* which he found in the Atlantic Ocean. Body demi-transparent, four antennæ inserted below the eyes, the exterior joined (*coudées*) and bifid. A sort of long beak on the front of the thorax between the eyes, and a pointed elongated elevation directed backwards upon the back. The feet very short and scarcely visible, with the exception of the two last, which are elongated or natatory. The tail as long as the thorax, curved and six-jointed, the last joint large, crescent-shaped, and spinous.

Slabber, Desmarest, Leach, and others, have contributed observations upon this genus, if indeed it may be so termed, and several species have been described. But if Mr. Thompson be correct, these animals have no right to any generic appellation or rank, being no other than larger species of *Crustacea* in their early state of existence. They thus become most highly interesting, as affording, according to him, positive evidence of the metamorphosis of the *Crustaceous decapods*. Having taken certain *Zoëas* in the harbour of Cove, Mr. Thompson states in the first No. of his *Zoological Researches*, (April, 1829,) that he saw them undergoing the change, and that enough was gained to show that the distinctive characters of *Zoea*, and of Slabber's changed *Zoea*, (*Zoea taurus*), were entirely lost, and

that the members from being natatory and cleft became simple and adapted to crawling only. To complete his proof of metamorphosis among the crustacea, he states in the same place, that he succeeded in hatching the eggs of the common crab (*Cancer pagurus*), the young of which were found to be similar in form to *Zoea taurus*; and he thence concludes that the crustaceous Decapods, generally, undergo metamorphosis, being, in the first state of their existence essentially natatory, and the greater number of them becoming afterwards, in their perfect state, incapable of swimming, being then furnished with *chela* (pinners), and with feet almost solely adapted for crawling.

But the publication of M. Rathke's elaborate researches on the formation and development of the crawfish (*Astacus fluviatilis**) shakes this general conclusion; for his observations prove beyond doubt that no such metamorphosis takes place in the young of that crustacean. It is right, however, to add, that Mr. Thompson, not one whit daunted by Rathke's publication, still holds his opinion, and, in a letter to the editor of the 'Zoological Journal,' dated Dec., 1830, states what he trusts will convince him that if any delusion exists, or source of error, it must rather attach to M. Rathke than to him; namely, that, in regard to the Brachyurous decapods (crabs, &c.) he has ascertained the newly-hatched animal to be a *Zoea* in the following genera: *Cancer*, *Carcinus*, *Portunus*, *Eryphia*, *Gegarcinus*, *Thelphusa*, *Pinnotheres*, *Inachus*,—eight in all; and that in the *Macroura* (lobsters, &c.) he has actually ascertained that the following seven genera are subject to metamorphosis:—*Pagurus*, *Porcellana*, *Galathea*, *Crangon*, *Palomon*, *Homarus*, *Astacus*. He admits, indeed, that the lobster (*Astacus marinus*) undergoes a metamorphosis less in degree than any other of the above enumerated genera, and consisting in a change from a cheliferous *Schizopod* to a *Decapod*;—in its first stage being what he would call a modified *Zoea* with a frontal spine, spatulate tail, and wanting sub-abdominal fins,—in short, as he says, such an animal as would never be considered what it really is, were it not obtained by hatching the spawn of the lobster. He then asks whether we are to consider the fresh-water species of *Astacus* or crawfish as an exception? or whether there is not reason, from the above detail, to suspect that this peculiarity must have escaped the notice of M. Rathke; adding that if it should be found otherwise, it can only be regarded as one *solitary* exception to the generality of metamorphosis, and will render it necessary to consider those two animals for the future as the types of two distinct genera. Our limits will not permit us to go more amply into the subject, and we must therefore refer our readers to numbers 1 and 2 of Mr. Thompson's 'Zoological Researches,'† for his elaborate details and illustrations, and, if they cannot procure M. Rathke's book, to the 5th volume of the 'Zoological Journal,' now completed, where an excellent analysis of the latter will be found. We cannot, however, close this subject without earnestly exhorting those, whose localities afford them opportunity, to pursue this most interesting subject. The following figure of *Zoea clavata* (Leach) taken by Mr. Cranch in the unfortunate expedition to the Congo, under Captain Tuckey in 1816, will give some idea of the general form of *Zoea*.‡



[*Zoea clavata*.]

* M. Milne Edwards describes a new species in the 13th volume of the 'Annales des Sciences,' to which he gives the name of *Nebalia Geoffroyi*, but he does not arrange it under *Nebalia* without some heritation, and proposes a new modification of the genus.

† Mr. Thompson in his 'Zoological Researches,' observes that *Nebalia* bears a greater affinity to the larvæ of the *Balanus* [CRANIPEDA] than to any other, and he considers that it will bear the same relation to those larvæ as *Mysis* bears to the decapodous *Macroura*.

‡ M. Milne Edwards's *Nebalia Geoffroyi* was found near Concarneau in Bretagne, living among small pebbles and the fragments of shells, and swimming on its side.

† Milne Edwards in his memoir ('Ann. des Sciences,' tom. 12.) describes the following new genera, which he considers as approaching very near to *Condytura*.

Rhæo. This was found in dredging for oysters near Port Louis, and M. Milne Edwards seems consequently to think that it lives at considerable depths in the sea. The species on which he founds the genus is *Rhæo Latreilli*.

Cæna. Found near Croisic upon rocks, which are not uncovered except at very low tides. The species on which the genus is founded is *Cæna Audeouii*. (It should be remembered that the term *Cæna* has been applied by some conchologists to a turritinated marine shell.)

* Untersuchungen ueber die Bildung und Entwicklung des Flusskrebeses: von Heinrich Rathke. Mit 5 Kupferst. Leipzig, 1829, fol.

† Zoological Researches and Illustrations; or Natural History of Non-descript or Imperfect Animals in a series of Memoirs; illustrated by numerous figures by John V. Thompson, Esq., F. L. S., Surgeon to the Forces, 8vo., Cork: King and Ridings; W. Wood, Strand; G. B. Sowerby, Great Russell-street, &c. &c. Five numbers published.

‡ Mr. Thompson says, that on the 28th of April, 1823, he took in a small muslin towing-net, while crossing the ferry at Passage, *Zoea Taurus*, hitherto only found in the Great Ocean, *Argulus armiger*, and others, actually inhabitants of the fresh water, and quite accidental. (*Polyphemus Oculus*, *Cyclopa*, *Praniza*, &c.)

Since the publication of Mr. Thompson's experiments, Mr. O. Westwood, one of our most able entomologists, has given a carefully elaborate description of the development of the ova of a land crab (*Gegarcinus*), contradictory of Mr. Thompson's observations and confirmatory of Rathke's. See the papers of Mr. O. Westwood and Mr. Thompson directly at variance with each other, 'Phil. Trans.' for 1835, part II.

The report of M. Milne Edwards is also at variance with Mr. Thompson's theory.

β.
One eye.

Thorax divided into many segments, as in *Condylura*. The anterior and much the largest segment presents a single eye only placed in the middle of the front between the superior antennæ. *Cyclops* (Müller), which has been so well illustrated by the acute observations of the elder Jurine and of Ramdohr, is the only genus of this subdivision.

The body of the *Cyclopes* is more or less approaching to oval, soft or rather gelatinous, and is divided into two portions, the one anterior, consisting of the head and thorax, the other posterior, forming what is commonly called the tail. The segment immediately preceding the sexual organs, and which in the females carries two supporting appendages in the form of little feet (*fulcra*, Jurine), may be considered as the first segment of the tail, which is not always very clearly defined or strongly distinguished from the thorax, and consists of six segments or joints, the second of which in the males is provided on its lower side with two articulated appendages of varied form, sometimes simple, sometimes having a small division at the internal edge, and constituting entirely or in part the organs of generation. In the other sex the female organ is placed upon the same joint. The last segment terminates in two points forming a fork, and more or less bordered with delicate beards or penniform fringes. The anterior portion of the body is divided into four segments, of which the first and by far the largest includes the head and a portion of the thorax, which are thus covered by one scale common to both. Here are situated the eye, four antennæ, two mandibles (internal mandibles of Jurine) furnished with a feeler (which is either simple or divided into two articulated branches), two jaws (the external mandibles or lip with little beards of Jurine), and four feet divided each into two cylindrical stems, fringed with hairs or bearded. The anterior pair representing the second pair of jaws differ a little from the succeeding pair, and are compared by Jurine to a kind of hands. Each of the three succeeding segments serves as the point of attachment to a pair of feet. The two superior antennæ are longest, setaceous, simple, and formed of a great number of small articulations. They facilitate by their action the motion of the body, and perform very nearly the office of feet. The lower antennæ (antennules of Jurine) are filiform, consisting most frequently of not more than four joints, and are sometimes simple, sometimes forked. By their rapid motion they produce a small eddy in the water. In the males the upper antennæ, or one of them only, as in *Cyclops Castor*, are contracted in parts, and exhibit a swelling portion which is followed by a hinge joint. By means of these organs, or of one of them, the males seize either the hind feet or the end of the tail of their females in their amorous approaches: when these last are unwilling they carry the males about for some time. The copulation is prompt and reiterated. Jurine saw three acts in a quarter of an hour. Before his time, it was generally believed that the male organs were situated at the upper antennæ, an error which was supported by the analogy of those of the *araneids*. On each side of the tail of the female is an oval bag filled with eggs (external ovary of Jurine), adhering by a very fine pedicle to the second segment, near its junction with the third, and where the orifice of the deferent egg canal may be seen. The pellicle which forms these bags is only a continuation of that of the internal ovary. The number of contained eggs increases with age. They are at first brown or obscure, but afterwards present a reddish tinge and become nearly transparent, without however increasing in size, when the young are about to come forth. When isolated or detached, up to a certain period at least, the germ perishes. A single fecundation, which is indispensable, suffices for successive generations, and the same female can lay eggs ten times in the course of three months, so that the number of births amounts to something enormous*. The time for the fœtus to remain in the ovary varies from two to ten days, the variation depending on the temperature of the seasons and on other circumstances. The oviparous bags present sometimes elongated, glandiform bodies, more or less numerous, which are supposed to be congregations of infusory animalcules.

The young at their birth have only four feet, and their body is rounded and tailless. In this state they are the genus *Amymon* of Müller. Some time afterwards (in

about fifteen days in the months of February or March) they acquire another pair of feet; they are then the genus *Nauplius* of the same author. After their first moult they assume the form and all the parts which characterize the adult state, but with smaller proportions: their antennæ and feet, for example, are comparatively short. At the end of two more moults they are fit for the reproduction of the species. The greater part of these *entomostraca* swim upon their backs, darting about with vivacity, and possessing the power of moving either backwards or forwards. Their food generally consists of animal matter in preference to vegetable; but in the absence of the former they feed on substances of the latter description, and it is said that the fluid in which they live never enters their stomachs. The alimentary canal extends from one extremity of the body to the other. The heart (taking *Cyclops Castor* as the subject) is of a shape approaching to oval, and situated immediately under the second and third segment of the body. Each of the extremities of this organ gives off a vessel, the one going to the head, the other to the tail. Immediately below is another analogous organ, giving off also at each end a vessel supposed to represent the branchiocardiac canals observable in the circulation of the *Decapod Crustaceans*. Jurine, who on many occasions reduced the *Cyclopes* to a state of complete asphyxia and restored them to life, found that in the process of reanimation the extremity of the intestinal canal and the supports gave the first signs of approaching animation, while the irritability of the heart was less energetic, and that of the antennæ, especially in the males, of the feelers and of the feet still inferior. When a portion of an antenna is cut off no change is effected at the time, but the organ is entirely restored in the succeeding moult. There are differences in the form of the antennæ and body of *Cyclops Staphylinus*, and in the kind of horny process arising on the under part of its tail and curved backwards, which led Latreille to consider it as forming a distinct subdivision; and he seems to be of opinion that *Cyclops Castor* and some others, whose lower antennæ and mandibular feelers are divided, beyond their base, into two branches, may form another group. *Calanus* (Leach), he observes, may be a sub-genus, if it be true that the animal which forms the type has no inferior antennæ; but he seems to doubt whether this absence was made out by Leach's own observations, or whether the assertion is made on the authority of Müller.

The genus *Cyclops* is an inhabitant of the fresh waters; and we select the common *Cyclops vulgaris*, *Cyclops vulgaris*, Leach; *Monoculus quadricornis*, Linn.; *Cyclops quadricornis*, Müller; *Monocle à queue fourchue*, Geoffroy, as an example of the species.

The body of the common *Cyclops* has a somewhat swollen appearance and is formed of four rings, and prolonged to about one-third of its entire length. The tail consists of seven rings. The posterior antennæ (antennules of Jurine) are tolerably large and composed of four joints, the anterior antennæ are thrice the length of the posterior.

There are several varieties.

Var. a. Reddish; eggs brown, forming two oblique masses near the sides of the tail. Total length eight-twelfths of a line. This is the *Monoculus quadricornis rubens* of Jurine.

Var. b. Whitish or grey, somewhat tinged with brown, rather larger than the preceding. Egg-masses greenish, forming nearly a right angle with the tail. Total length the same as the preceding. This is the *Mon. quadr. albidus* of Jurine.

Var. c. Greenish. Direction of the two egg-masses intermediate between that of the egg-masses of the two former. Length nine-twelfths of a line. *Mon. quadr. viridis* of Jurine.

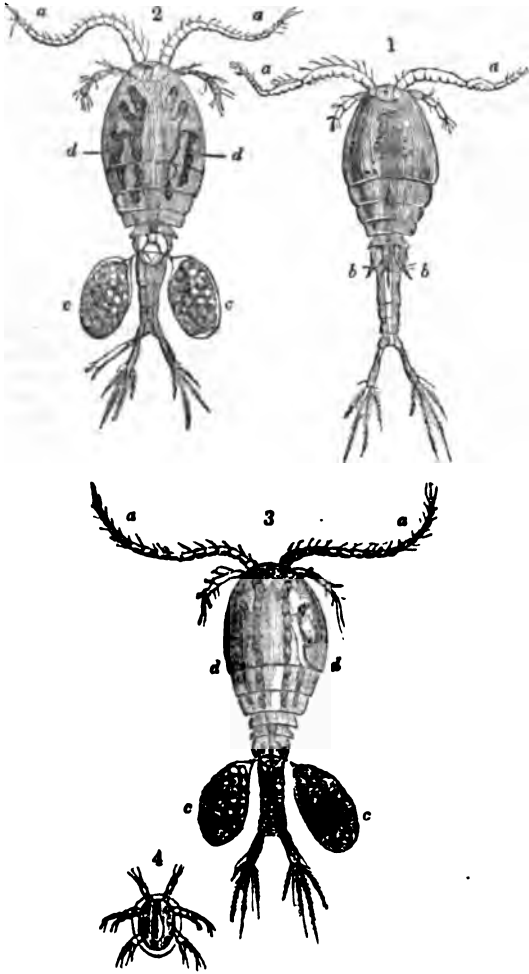
Var. d. Smoky red. General form nearly oval. Eggs brown composing two masses, which cover a great portion of the tail. Length six-twelfths of a line. *Mon. quadr. fuscus* of Jurine.

Var. e. Of a deeper green than Var. c. Eggs obscure green, passing a little into rose-colour when hatching is near, forming two masses attached to the tail, and appearing to be incorporate with it. Length the same as the preceding. *Mon. quadr. prasinus* of Jurine.

According to Jurine's observations, the common *Cyclops* when hatched is nearly spherical, and is furnished with four feet only and but two antennæ. In this state it continues till the fifteenth day, and then a small elongated

* Taking eight copulations and allowing forty eggs for each, it has been calculated that one female *Cyclops* may be the progenitress of four thousand five hundred millions.

takes place at the posterior part of the body. When twenty days old it acquires two additional feet, which are not however fully developed till the expiration of five days more. At the age of twenty-eight days it moults, and is not in a condition to assist in the continuation of the species till it has changed its skin a second time, when it takes its permanent form: this happens about the month of August. The female when once fecundated makes a succession of deposits of eggs without having occasion again to have recourse to the male.



[*Cyclops vulgaris* magnified.]

1. Male of variety a; 2, female of the same; a a, antennæ; b b, sexual organs of the male; c c, external oviparous pouches of the female; d d, internal ovaries; 3, a female of variety c; 4, a young individual of that variety

* *

Ostráccoda, Latreille; *Ostrópoda*, Straus.

The shell of the *Ostráccoda** is formed of two pieces or valves representing those of a conchiferous mollusk or bivalve shell, but horny, not testaceous. As in the bivalves, the two pieces are united by a hinge, and when the animal is inactive they close upon and shut in the body and the parts. The feet are ambulatory, six in number, and none are terminated by a digitated swimming organ, nor accompanied by a branchial lamina. The antennæ are simple, filiform, or setaceous. There is but one eye, which is composite and sessile. The mandibles and jaws are furnished with a branchial lamina, and the eggs are situated on the back.

Of this division there are two subgenera, *Cythere*, Müller, (*Cytherina*, Lamarek.) and *Cypris*. Of the former, which is found in salt and brackish waters, among the sea-weeds and *confervæ*, very little comparatively is known. We therefore select *Cypris*.

Cypris has six feet; Ramdhor indeed allows but four, and Jurine gives eight. The first considers the two last as masculine appendages, and the second looks upon the palpi or feelers of the mandibles and the branchial lamina

* Thompson observes that Mac Leay, in his *Herce Entomologica*, appears to think, and not without reason, that *Pentaclemis* shows the greatest affinity with the *Ostráccoda*, among crustaceans.

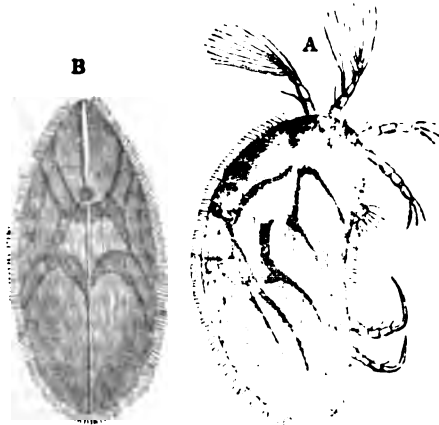
of each upper jaw as in the nature of feet, and excludes from this number the presumed masculine appendages above mentioned, which he considers as filaments of five articulations proceeding laterally from the pouch of the matrix, and of the use of which he is ignorant. The two antennæ are terminated by a pencil of fine hairs. The case or shell is suboval, arched, and protuberant on the back or hinge side, and nearly straight or a little sinuous or kidney-shaped on the opposite edge. A little in advance of the hinge, and upon the mesial line, is the single large blackish round eye. The antennæ, which are inserted immediately below, are shorter than the body, setaceous, composed of from seven to eight joints, of which the last are the shortest, and terminated by a pencil of twelve or fifteen fine hairs, which serve as swimming organs. The mouth is composed of a carinated labrum; of two large toothed mandibles, each furnished with a feeler of three joints, to the first of which a small branchial lamina of five digitations (interior lip of Ramdhor) is attached, and of two pairs of jaws; the two upper, which are much the largest, have on their internal border four moveable and silky appendages, and externally a large branchial lamina pectinated on its anterior edge; the second are formed of two joints, with a short, nearly conical, and jointless feeler, also silky at the end. A sort of compressed sternum performs the office of a lower lip (external lip of Ramdhor). The feet have five joints, the third representing the thigh, and the last the tarsus; the two anterior ones, much stronger than the rest, are inserted below the antennæ, directed forwards with stiff hairs on long hooks collected into a bundle at the extremity of the two last joints; the four following feet are without these appendages. The second pair, situated on the middle of the under side of the body, are directed backwards, curved, and terminated by a long strong hook bent forwards; the two last, never showing themselves beyond the shell, are applied to the sides of the body for the purpose of sustaining the ovaries, and are terminated by two very small hooks. There is no distinct joint observable in the body, which terminates posteriorly in a kind of tail, which is soft and bent upon itself underwards, with two conic or setaceous filaments fringed with three silky hairs or hooks at the end, and directing itself backwards so as to project beyond the shell. The ovaries form two large vessels, simple and conical, situated upon the posterior sides of the body under the shell, and opening, one at the side of the other, at the anterior part of the abdomen, where the canal formed by the tail establishes a communication between them. The eggs are spherical.

Generation.—The mode of continuing the species is doubtful. Ledermüller declares that he has seen the junction of the sexes; but many modern naturalists whose attention has been particularly directed to the point have failed in discovering their sexual organs, and have in vain watched for what Ledermüller declares he saw. Straus observed a large conical vessel filled with a gelatinous substance inserted below the origin of the mandibles and appearing to communicate with the œsophagus by a straight canal. As the individuals in which he detected this vessel were furnished with ovaries, it would follow, if this organ be a testicle, that the animals are true hermaphrodites; but he himself expresses doubts upon the subject, allowing that the vessel may be a salivary gland—that it seems to have more connexion with the digestive than the sexual functions—and observing that the males can only exist at a certain time of the year.

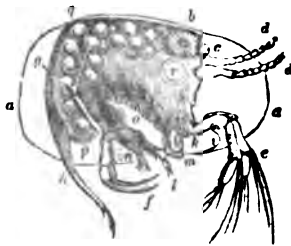
Habits.—These animals swim with more or less rapidity in the still fresh waters or gently-running streams which they inhabit, in proportion as they bring into action (according to Jurine) the filaments of the antennæ—sometimes they only show one, at others they put them all forth. Latreille thinks that these filaments may also assist in respiration. The two anterior feet are moved with the same rapidity as the antennæ when the animal is swimming: when it creeps over the surface of the water plants, the progress is slow. The female deposits her eggs in a mass, fixing them by means of a glutinous substance on the water plants or on the mud. Anchored by her second pair of feet so as to be safe from the agitation of the water, she is occupied about two hours in this operation, the produce of which, in the largest species, amounts to twenty-four eggs. Jurine collected some of these at the time of their exclusion, and, after having insulated them, obtained another generation without the intervention of the male. A female which laid her eggs on the 12th of April changed her skin six

times between that day and the 18th of May following. On the 27th of the last-named month she laid again, and, two days afterwards, made a second deposit. Jurine concludes that the number of moults in the young state corresponds with the gradual development of the individual. Desmarest considers that they do not undergo a metamorphosis, but that they present, on their exclusion from the egg, the form which they preserve throughout their life. Their food is said to consist of dead animal substances and of *conserve*. In summer, when the heats have dried up the pools, they plunge into the humid mud, and there remain in an apocryphal kind of existence till the rains again restore them to activity.

The recent species are numerous; Jurine describes twenty-one. Of these we select the largest, *Cypris ornata* (one line and 2-12ths), Müller, for an external view, and *Cypris fusca* ($\frac{1}{2}$ of a millimetre), Straus, to show the internal organization.



Cypris ornata (magnified). Shell yellowish green, banded with green. A, side view; B, view looking upon the hinge. The bands commence behind the eye.



Cypris fusca (magnified), Straus. Valves brown, kidney-shaped, covered with fine scattered hairs. Antennæ with fifteen fine bristles. In the view the valves are supposed to be removed, the outline *a a* showing their shape and their relative situation; *b*, origin of the hinge membrane; *c*, eye; *d d*, antennæ deprived of their bristles; *e* feet of the first pair; *f*, of the second; *g*, of the third pair; *h*, tail; *i*, labrum; *k*, mandible; *l*, feeler; *m*, jaw of the first pair; *n*, of the second pair; *o*, branchia or gill; *p q*, posterior portion of the left ovary; *r*, insertion of the vessel regarded as a testicle by Straus.

FOSSIL CYPRIS.

Cypris Fuba, Desmarest, holds a place among the organic remains of the Wealden rocks of England. Dr. Fitton has recorded it in the Weald clay of the Isle of Wight, Swanage Bay, &c., and Mr. Mantell in the Hastings Sands. Desmarest notes the species as found in great abundance near the mountain of Gergovie, in the department of the Puy de Dôme, and at the *Balme d'Allier*, between Vichy-les-Bains and Cussac. Their great fruitfulness and the frequent moults noticed above may account in some measure for the quantities of their petrified exuvie. *Cypris* has also been found in the fresh-water limestone, beneath the Midlothian coal-field, at Burdiehouse, near Edinburgh.

Straus observes that Bennet asserts Baker to be the first author who has mentioned this crustaceous form, and that Baker has given a figure of it in the 'Microscope made Easy,' at plate 15; but Straus adds that neither in the edition of 1743, nor in that of 1744, is any account given of it, and that there is no 15th plate. There certainly is no plate 15 in the edition of 1744, nor any figure or description that will accord with *Cypris*, while there is, at plate 9, a very fair representation, and at p. 93, a very fair account of *Cypris*. Baker commences his account of the latter thus: 'You may find in the waters of our ditches several species of testaceous and crustaceous animalcules, two of these

latter sort, which are most remarkable, are shown, &c.' These are of the genus *Cylops*. May not Baker have had *Cypris* in his eye when he wrote 'testaceous animalcules'—for when the valves are closed, it has all the appearance of an acephalous testaceous mollusk in a bivalve shell—may not this be the passage alluded to by Bennet? The following authors may be consulted on these animals, whose highly curious organization and history have employed the pens of Linnæus, Joblot, Geoffroi, Müller, Lederer, Bennet, De Geer, Fabricius, Bosc, Cuvier, Latreille, De Cuvier, De Férussac, Lamarck, Straus, Jurine, Desmarest.

Cladocera, Latreille; *Daphnides*, Straus.

These, which are very minute, have a single eye only, and are protected by a shell doubled as it were, but without any hinge, according to Jurine, and terminated posteriorly in a point. The head, which is covered with a kind of helmet-like armour, projects beyond the shell. There are two antennæ, generally large, in the form of arms, divided into two or three branches, placed on a peduncle fringed with filaments always projecting, and serving the purpose of oars. The feet are ten in number, terminated by a digitated or pectinated swimming organ, and furnished, with the exception of the two first, with a branchial lamina. Their eggs are situated on the back, and their body terminates with a sort of tail, with two delicate hairs or filaments at the end. The anterior part of the body is sometimes prolonged into the form of a beak, sometimes into a snout, approaching that of a head occupied nearly entirely by a large eye.

Latreille gives the following subgenera: *Polyphemus*, Müller; *Daphnia*, Müller; *Lynceus*, Müller (*Chydorus*, Leach). Of these, *Daphnia* is the most numerous genus, and though it is so extremely small, the observations of naturalists, and more especially of Schæffer, Rastbach, Straus, and the elder Jurine, have rendered its organization and habits extremely well known. Straus, who has given an excellent monograph of the *Daphniidæ*, adds two subgenera, *Latona*, characterized by antennæ in the form of oars divided into three branches, with a single joint (*Daphnia setifera*, Müller); and *Sida*, with antennæ divided into two branches, one of which has but two joints, while the other has three (*Daphnia crystallina*, Müller). We regret that our limits will not allow us to go into more detail upon these interesting animals, and we must content ourselves with referring to the authors above mentioned, with the addition of Swammerdam, and Latreille, for particular observing by the way that one junction of the sexes terminates the ova for many successive generations, six at least; that their moults are very frequent; that they lay at first but one egg, then two or three, and so on progressively, as they advance in life till their number amounts to 500 in one species (*Daphnia magna*); and that the young of the same deposit are generally of one sex, it being rare to find two or three males in a female batch, and *vice versa*. As the winter approaches, their moults and oviposits cease, and the frost is supposed to destroy them, leaving however the eggs unharmed, which the genial spring season hatches to fill the pools with myriads of *Daphniæ*. Then those who have microscopes will find ample employment for them. Every ditch, every pool, every garden reservoir, will furnish the observer with Branchiopods.

The species are numerous. The most common is the *Water-flea*, *Monoculus Pulex* of Linnæus, *Pulex aquatica arborescens* of Swammerdam, *Le Perroquet d'eau* of Geoffroy. Despised as this minute creature may be by those who, like the orientalists, consider size as absolutely necessary to produce grand ideas, it has fixed the especial attention of Swammerdam, Needham, Leuwenhoek, Schæffer, De Geer, Straus, and above all of Jurine, who, in company with other philosophers of great name, have found as much interesting information regarding the development of animal life in the admirable organization of these animalcules as is afforded by the largest vertebrate animal.

SECTION II.

Phyllopa.

Distinguished by the number of feet, and by the lamellar or foliaceous form of the joints, representing, according to Latreille, the *Myriapods* in the class *Insecta*. The legs are always two in number, formed of a sort of network, and sometimes placed on pedicles; many have besides a single smooth eye.

species confounded under the specific name *canceriformis*, viz., Schœffer's and Dr. Leach's, which most resemble *Apus Guildingi* and that described by Savigny, in which the elongated shield entirely covers the natatory members.

Mr. Thompson observes that there is a considerable approximation between Artemis and certain Trilobites (*Bucephalithus*, &c.), nor can there be any doubt that the analogies of *Branchipus*, *Serolis* and *Limulus* all contribute to the illustration of that most ancient race of crustaceans. We have not, as yet, data sufficient to fix their proper position, but there is every reason for supposing that their organization was constructed upon the principle of having the same organs made subservient both to locomotion and respiration. [TRILOBITES.]

BRAND or BURN. Brand, a disease in vegetables by which their leaves and tender bark are partially destroyed as if they had been burnt; hence the name of this disease, which is called *brûlure* in French. It has been observed that after the leaves have been wetted by dews or gentle rains, so that drops adhere to them, and a bright sunshine has succeeded, every spot to which the water had adhered lost its natural colour, and became of a dark or yellow hue; and on closer examination it was found that the organization had been partly destroyed, and that these spots no longer possessed the power inherent in healthy leaves of exhaling water and carbonising the sap which circulates through them. When this disease is extensive and attacks the bark as well as the leaves, it frequently causes the death of the plant, and, at all events, enfeebles its growth, and prevents its perfect fructification. The cause of this, like that of most diseases which are common to plants, has been vulgarly ascribed to some unknown atmospheric influence; and various guesses have been made which, for the most part, have little or no foundation. That which appeared most plausible was, that the drops of water being apparently globular, collected the light of the sun into a focus, and produced a sufficient degree of concentration of the calorific rays to burn the tender substance of the leaves. A little reflection will soon convince us that this will not bear examination. The drops which adhere to the leaves and the bark are not globes, but at best flattened hemispheres, and consequently cannot collect the rays of the sun into a focus on the surface to which they adhere; besides, the spots are as large as the diameter of the drops, so that all the surface that has been covered with water is injured; whereas the focus of a globe, such as would actually burn the leaf, must be very small in proportion to the lens which concentrated the rays. It is much more probable that the effect of the water on the tender epidermis of the leaf or bark to which it adheres is similar to that which it has on vegetable matter infused in it; it softens and dissolves a portion of it, especially when the temperature is somewhat raised, and destroys the vitality; galvanic action may also be excited and increase the effect. It is well known that light is the great agent which produces the change in the sap circulating in the leaves, and that without light the healthy green colour of the leaves and bark, and the peculiar qualities of the descending sap, are not produced. Little or no evaporation takes place from the leaves in the night, and the sudden excitement produced on the whole of the surface of the leaves by the rising sun in a clear morning tends to disorganize those parts to which the water adheres. We do not give this as a perfect and adequate solution of the question, but it appears nearer the truth than any of those more commonly received. (De Candolle, *Physiologie végétale*, vol. iii. chap. iv. s. 2.)

It is a fact that the principal mischief arises from a sudden change of temperature soon after sunrise, especially when there has been a heavy dew or hoar frost in the night; and careful gardeners brush off the drops from their delicate plants before sunrise to guard against the brand. Every drop which falls on the leaves of tender plants from the glass which covers a hotbed in which they grow produces a disease exactly similar to that which we have been describing; and although the vapour of fermenting dung has a pungent, ammoniacal smell, it will be found that the water condensed on the glass is nearly pure, and can have no peculiar corroding effect. It acts therefore simply as a dissolvent, and by stopping the evaporation, which is always rapid from the leaves of plants in a hotbed, produces a derangement in their functions, and ultimately disease.

BRAND IN CORN. [BURNED EAR.]

BRANDENBURG, a prov. of the kingdom of Prussia, derives its name from the Mark of Brandenburg, the ances-

tral dominions of the reigning family; the Mark itself being indebted for its own denomination to the ancient t. of that name. Its component parts, however, are not what they were in former days; for the N.W. districts of the Electoral Mark (Kurmark) and the Alt-mark (Old-m.) have been incorporated with the prov. of Saxony; and the northern parts of the Neumark, adjacent to Pomerania, have been united with that prov. In exchange for these, several minor circles, bailiwicks, and other parcels of land, all of them once forming a portion of the districts of Wittenberg, Meissen, Querfurt, &c., in the kingdom of Saxony, are now comprised in Brandenburg. With the exception of two insignificant tracts, surrounded by the territory of Mecklenburg-Schwerin, the prov. forms a compact mass. Its boundaries are, to the N., the two grand Duchies of Mecklenburg-Schwerin and Strelitz, and the Prussian prov. of Pomerania; in the E., the provinces of Western Prussia, Posen, and Silesia; in the S. the provinces of Silesia and Saxony, and the Anhalt principalities; and in the W. the prov. of Saxony, and the Hanoverian dominions. Brandenburg thus extends between 51° 10' and 53° 37' N. lat. and 11° 13' and 16° 12' E. long. Its area is about 15,330 sq. m., and occupies about a seventh part of the whole surface of the Prussian dominions; it ranks as the fourth prov. with reference to density of pop.

The whole of Brandenburg is an almost uninterrupted plain, slightly elevated above the surface of the Baltic. Its soil is composed of river sand, in some quarters mingled with ferruginous earth, loam, or clay, and hence arises a great diversity in its character, that a general failure of crops is almost unknown; for a season unfavourable to one part is usually found proportionably beneficial to another. The more elevated and undulating parts of the surface, which are most frequent in the S. districts, between Frankfort on the Oder and the Silesian frontier, are improperly called 'mountains' by the inhabitants; among these are the Oderberge (m. of the Oder), the Neiss and Schlagedorferberge, in the vicinity of Guben, the Müggelsberge on L. Müggel, about 8 m. S.E. of Berlin, 340 ft. in height, and the heights which run along the Havel. These are prominent features however in the midst of a wide and well-some flat, and intermingling with numerous lakes, many of them lying in deep hollows, form landscapes of considerable variety. Of the larger class there are not fewer than 100. The most fertile districts are the low lands, termed the Havelland, the Brüche (or Carsees) of the Oder, Warth, and Netzel, the Spreewald (wood of the Spree), the N. and E. parts of the Uckermark, the Lenzerwische on the Pr. front, and what is denominated the 'Alte Land' (Old Land) in Lower Lusatia. But Brandenburg contains many extensive heaths and moors, here called 'Brennfächen' (burning flats), which are a collection of drift sand, the cultivation of which has often baffled the utmost efforts of industry. The climate of Brandenburg is temperate, but exceedingly variable: the result of several years' observations fixes the maximum of heat at between 24° and 25° Reaumur (86° and 88° of Fahrenheit); the maximum of cold is said to be — 8° R. (18° below freezing of Fahrenheit.), but the temperature is rarely so low as this for more than three or four days. It is also stated, that upon a comparison of one year with another, there are 210 clear, dry, and 155 cloudy and rainy days.

Brandenburg is either traversed or skirted by two of the principal streams of Germany; the Elbe, which forms the N.W. boundary for a short distance, and the Oder, which drains its E. districts. The Elbe skirts Brandenburg from Sandau to Dömitz, and on this line of its right bank receives the Havel, Stepnitz, and Elde. The number of tracts of land, lower than its surface, which abound in this quarter, are protected from inundation by artificial dykes. The Havel, which is a channel for the efflux of the Elbe and other small lakes in Mecklenburg-Strelitz, becomes navigable at Fürstenberg, below which point it enters Brandenburg; it then flows past Liebenwalde, Oranienburg and Spandau; and thence taking a W. direction through Potsdam, and the town of Brandenburg, it turns to the N.W. at Plauen, where it is joined by the canal of that name, skirts Rathenow and Havelberg, and falls into the Elbe by two arms, between Havelort and Quitzöbel. It passes through a low tract of country, which sand, woodlands, and pasture-grounds alternate; its width at Oranienburg is 100 ft., and at Spandau it increases in consequence of passing through several lakes: between Brandenburg it narrows again to 200, and at its mouth increases to 500. A branch of it strikes off at Brandenburg;

and flows into lake Plauen. There is no riv. in the prov. so important for internal intercourse as the Havel. The Stepnitz rises on the Mecklenburg frontier, and flows past Meyenburg and Perleberg, until it reaches Wittenberge, where it falls into the Elbe; the Elde issues from Lake Plauen, and forms the boundary line between Brandenburg and Mecklenburg, until it joins the Elbe near Dömitz in Mecklenburg. The principal tributary of the Havel is the Spree, which comes down from the Lusatian mountains and passes through Bautzen (N. of which it enters Brandenburg), Kottbus, Cöpenick, Berlin, and Charlottenburg, in its N.W. course towards the Havel, into which it falls at Spandau. It is 100 ft. broad, where it is joined by the Müllrose canal, and about 200 at Berlin, and is navigable from Cossenblatt. The Rhin and Doase, both of which rise on the borders of Mecklenburg, are also two tributaries of the Havel, and chiefly useful to the N.W. parts of the prov. for floating rafts and timber. The E. side of Brandenburg is watered by the Oder, which leaves the Silesian territory and enters the prov. a little to the S. of Züllichau, winds W. past Crossen, and somewhat above Fürstenberg pursues a N.W. course through Frankfurt, Cüstrin, and Wrietzen; quits Brandenburg to the N. of Schwedt, above which it turns to the N.E., and enters the prov. of Pomerania. From Cüstrin northwards it divides into several branches, and forms a succession of islands. At the village of Güstebiese, 9 or 10 m. N.E. of the t. of Wrietzen, it separates into two large arms, of which the E. is the most considerable; this arm is called the New Oder or canal of the Oder, and after making a bend northwards, it winds round on the one hand to the S.W., and rejoins the western arm or Old Oder N. of Freienwalde, and on the other is conducted by a canal to a point lower down into the Old Oder, to the S. of Hohenstaden. Lowlands occupy a space above 20 m. in breadth between these two arms, and nearly the whole line of the Oder below Frankfurt is bounded on each bank by meadows and lowlands, which are dyked in at many points. The lowlands along the Oder are occasionally skirted by high ground in the neighbourhood of Frankfurt and Freienwalde. There are bridges across it at Crossen, Frankfurt, Cüstrin, and Freienwalde. The chief tributaries of this riv. are the Bober, which, descending from Silesia, enters Brandenburg at Naumburg, and flows N.W. to Crossen, where it joins the Oder: its banks are flat, and the pasturage grounds about it subject to inundations; the Neisse, or Lusatian Neisse, also descends from Silesia, enters the prov. to the N. of Muskau, pursues a northerly course to the towns of Forste and Guben, and falls into the Oder, opposite to a vil. called Schiedlow; the lands along its banks are low meadow grounds: it is navigable from Guben downwards, and great quantities of fruit are sent by it to Berlin. The Wartha, a still more considerable river, enters Brandenburg in the E. below Schweffin, in the prov. of Posen, is 400 ft. broad where it enters the prov.; has the town of Landsberg on its right bank, and flows S.W. through the Warthabruch (carse of the Wartha, about 32 m. in length) to Cüstrin, where it widens to 600 ft. and is received by the Oder. It is navigable along its whole line in this prov., though there are some shallows near Landsberg, and most of the lowlands upon its banks have been brought under cultivation: the Netze and Mietzel are its tributaries in this quarter; and the Welse, which flows out of Lake Grimnitz, near Joachimsthal, and, at a distance of about 14 m. from its mouth, receives the Randow, which forms part of the N. boundary between the prov. and Pomerania, and flows into the Oder on its left bank below Vierraden, in the vicinity of Schweltdt. There are several smaller rivers in the prov., such as the Finow, the Stoberow, and the Ihna, which pour their waters into the Oder, and the Dömitz and Ucker, which are useful for commercial or manufacturing purposes. The inclination of the surface is from the N., to the level of the two great streams, the Elbe and Oder; but the slope is so gentle and the descent of the water-courses in this prov. so inconsiderable as to occasion the formation of a number of small lakes (those of Grimnitz, Werbellin, Soldin, Schwilung, Ruppın, Rheinsberg, &c.) as well as the overflowing of large tracts of land near the banks rivers.

The Havel is united to the Elbe by the Plauen Canal, which leaves the Havel at Plauen, and passing Genthin joins Brandenburg to the Elbe near the vil. of Paray. This can. is about 21 m. in length, from 26 to 36 ft. broad, and 6 ft. deep: it has a fall of 16½ ft. between the Elbe and Havel, and shortens the distance between Berlin and Magdeburg by about 55 m. The Ruppın Canal, which lies

between the Rhin and Havel, unites Lake Ruppın with the Havel at Oranienburg; it is about 20 m. long, and is very useful for the conveyance of peat. The Havel and Oder are connected by the Finow Canal; commencing at Liebenwalde it runs E. into the Fühne near Neustadt-Eberswalde, thence flows in the deepened bed of the Fühne to Lake Liepe, and completes a line of rather more than 25 m. by joining the Oder near Oderberg: its breadth varies from 49 to 74 ft.; it has 15 locks, and has a fall of 138 ft. The Welse is also united with the Havel by the Canal of Werbellin, which leads from the lake of that name into the Finow Canal, and as that lake is connected with Lake Grimnitz, establishes a navigable communication between the two rivers. In the same quarter lies the Templin Canal, which is used for the transport of timber only: it begins from Lake Lobau to the E. of Templin, passes through several lakes, and joins the Havel above Zehndnick: its length is about 23 m. Between the Spree and Oder there is the Canal of Müllrose or Frederic William, the last name being derived from the celebrated Elector of Brandenburg, under whom it was constructed between the years 1662 and 1668. It leads out of the Spree from the vil. of Neubrück below Beeskow, and pursues an E. course past Müllrose and Ober-Lindow into the Oder: it is about 14 m. long and about 50 ft. wide, but not of sufficient depth when the season is dry: the fall is about 65 ft. There are also in this prov. the Storkow Canal for floating timber, which unites Lake Dolgen with the Spree at Cöpenick, and the New Oder Canal, between Güstebiese and Hohenstaden, which forms part of the boundary between the circles of Frankfurt and Potsdam, and of which we have already spoken as likewise denominated the New Oder. Brandenburg is much favoured by the water communication which exists between the Elbe, Oder and Vistula; this is effected by the line of the Wartha, which falls into the Oder, by the flowing of the Netze into the Wartha, and by the connexion of the Netze and Vistula through the Bromsberg Canal. There are a few mineral springs in the prov., but only two of any note, that of Freienwalde, and another near Berlin.

The principal native productions of the prov. are corn of all descriptions, besides buck-wheat, vegetables, and fruit, hay and clover, &c., flax, hemp, tobacco, wine in small quantities, timber, domestic animals of the usual kind, game, fish, honey and wax, bog-iron, coals, lime, gypsum, and clay.

The majority of the inh. are of German descent; some are also of Wend extraction, and not a few of French. Most of the French are settled in Berlin; the Wend colonists, in number about 160,000, reside in Lusatia, the bailiwicks of Senftenberg and Fürstenwalde, and the circle of Kottbus in the New Mark; and in some few parts there are Herrnhuthers and Mennonites, particularly at Berlin. The progress of the pop. during the last eighteen years is shown by the following table:—

	C. of Potsdam, incl. Berlin.	C. of Frankfort.	Total.	Increase.
1817.	7838 sq. m.	7497 sq. m.	1,297,795	" "
1821.	748,027	615,831	1,366,858	66,063
1825.	835,057	643,814	1,478,871	115,013
1828.	874,756	664,926	1,539,562	60,711
1831.	896,751	683,188	1,579,939	40,357

The present pop. may be estimated at 1,642,000 souls, of whom about 920,000 form the rural pop., residing in 4379 vil., hamlets, and isolated farms; the remainder are in 152 cities and towns, of which 70 are in the circle of Frankfort and 82 in that of Potsdam.

The Brandenburg return for the year 1825 is—

	Churches or places of worship.	Other public buildings.	Dwelling houses.	Barns, stables, &c.	Manuf. mills and stores.
Circle of Potsdam	2697	7,640	79,769	93,652	5,099
" " Frankfort	1063	3,432	87,120	119,529	8,334
Total for whole prov.	3660	11,072	166,909	213,481	13,434

The majority of the inh. are of the Lutheran religion; but the royal family, French refugees, or their descendants (commonly called Hugonots), and a small portion of the German pop., are of the Reformed Lutheran Church. The following classification for 1821, than which we believe none later has been made public, brings them under four general heads:—Protestants, 1,338,887; Roman Catholics, 15,431; Mennonites, 327; and 9210 Jews. In 1831 the number of births was 58,059, and deaths 53,614: the marriages amounted to 12,125.

As to agriculture, it appears from Krause's statement for the year 1831 that, excluding the pop. of Berlin and other towns, the average number of acres actually brought under cultivation is 16 to each individual; whereas, if the agricultural pop. only be included, it does not amount to more than 8·8. It has been estimated that the number of acres in Brandenburg under the plough, or used for the production of tobacco or hops, is about 6,700,000. Potatoes as well as other vegetables are raised in abundance, and the quantity of land employed as garden-ground is said to be 63,000 acres. More flax is produced than is sufficient for domestic consumption, but hemp is of limited cultivation. Under such a lat. it is not so much a matter of surprise that little wine should be produced, as that the grape should attain sufficient maturity to yield it; the wine is however of very indifferent quality, and is only partially made along the banks of the Neisse, Havel, and Oder, about Züllichau, and a few other spots. The crops of fruit are not adequate to supply the demand. The woods and forests are estimated to cover 3,300,000 acres; the sandy eminences and plains produce mostly firs and pines, but there are forests of oaks which yield a very superior description of ship-timber; the largest tracts of woodland lie in the districts N. of the Wartha and Netze, in the New and Ucker Marks, and the S. and W. districts of Brandenburg. Considerable quantities of tar and potashes are manufactured.

Great attention is paid to the rearing of cattle; the most thriving branch is breeding sheep, the number of heads of which, in 1821, were 1,809,512, and, in 1831, 1,943,644. The wool produced in the New Mark, the flocks of which constitute about one-third of the whole stock, is considered the finest in the Prussian dominions; of this stock 443,778 were, in 1831, of the most improved breed. The number of goats at the same date was about 11,200. Until of late years the breed of horses was but indifferent; much has, however, been done to improve it, both by the government and private individuals, who have introduced the best English and other foreign breeds into the country, but they do not seem to have effected an increase of the stock, since it fell between the years 1828 and 1831 from 168,348 to 162,831. The greatest number of horned cattle are bred on the reclaimed grounds and in the marshes along the rivers, but the breed is indifferent and small in size, nor is the stock on the whole sufficient; the numbers in 1801 were 866,141; but in consequence of the devastations occasioned by the intervening wars, they did not amount to more than 523,981 in 1821, and have since diminished to 511,224. Swine are not reared in any considerable numbers; in 1801 they consisted of 298,189 heads, and in 1821 did not exceed 187,187. Much honey and wax is produced, particularly in the six Lusatian circles, the heaths of which afford abundance of flowers for the bee. The inland consumption is amply provided with fish, especially eels and crabs, but none are exported; and the woods and forests abound in game.

Brandenburg is poor in metals and minerals, nor are there any regular mines in it; small quantities of bog-iron are obtained near Ruppın and in the Uckermark. There are very considerable lime-works near Rüdersdorf; much gypsum is raised at Sperenberg; and large supplies of alum are obtained from Freienwalde, Gleissen, and Kanich. Coals are dug at Zilenzig; peat is plentiful, as well as potter's clay.

Brandenburg possesses considerable manufactures, though it cannot be termed, upon the whole, a manufacturing prov., inasmuch as they are confined to a few towns, and the prov. itself participates very partially in their operations: spinning and weaving are the only branches in which the rural pop. take any part. The first manufactures were established by the Hugonot refugees, who received cordial assistance from the government, and were liberally seconded by it in their outset. The woollen manufactures, which are the most important, are established in most of the towns in the Old and New Marks; those for the finer sorts of goods are at Luckenwalde, Züllichau, Kottbus, and Guben; kerseymeres and merino cloths are made in Berlin, where woollen yarns are spun on a large scale by steam-machinery. The manufacture of linens, chiefly of the middling and coarser sorts, is extensively carried on in the Lusatian districts and the circle of Frankfort; that of silks and cottons is mostly confined to Berlin: the inh. have brought the manufacture of other articles of luxury to great perfection. There are large tanneries in several quarters, particularly in Kottbus and other towns in the circle of Frankfort. The number of

paper-mills is upwards of 36, but they are quite inadequate to meet the demand for the Berlin trade, or indeed for the prov. in general. Berlin alone supplies all Brandenburg with refined sugar. Tobacco manufactories exist in most of the towns; and in the making of plate and other glass porcelain, and earthenware, no part of Germany excels this prov. Iron and steel ware and cast iron goods are principally manufactured at Berlin. The latter manufacture is carried on at Berlin to great perfection. There is peculiar to that city the manufacture of ladies' necklaces and bracelets of cast-iron, which are much prized. There are smelting furnaces for iron at Gotow, Vietze, Pleiske, &c. Copper is also wrought at Neustadt-Eberswalde on a more extensive scale than in any other part of Prussia, as well as at Crossen and Rodach; and there is a large gunpowder manufactory in the neighbourhood of Berlin. Heavy duties are exacted on the introduction of foreign productions, particularly such as are likely to interfere with the interests of the domestic manufacturer.

The trade of Brandenburg is greatly favoured by the multitude of its navigable riv. and can., the last of which establish a long line of communication between the Elbe, Oder, Havel, and Spree. The main outlets of this trade are through Hamburg by the Elbe, and through Stettin by the Oder; but the former is cramped by the monopoly of transport enjoyed by the guild of the Markish navigators. Berlin is the great centre of commercial enterprise, not only for this prov., but the whole of the Prussian territory; and next in importance to it is Frankfort on the Oder, the fairs of which are still of considerable magnitude, especially with reference to the sale of Brandenburg produce and manufactures. Brandenburg, Guben, Havelberg, Küstrin, Landsberg, Potsdam, Prenzlau, Rathenau, and Züllichau are also places of considerable trade. There are banks for exchange and loans in some of the towns; but the principal establishments of this nature are at Berlin.

For the purpose of civil government, Brandenburg is divided into the two circles of Potsdam and Frankfort, both of which are subordinate to the controul of a president-chief (Ober-president), who is resident in Potsdam. Immediately under him are the protestant bishop, the consistory, and board of provincial schools; his authority also extends over ecclesiastical matters, all establishments for education, the boards of medicine and military and civil works, the office of rents at Berlin, and the department of the mines. He is president also of the provincial states, which have the power to discuss or reject what the government brings before them, but are a purely administrative body. They consist of a deputy from the chapter of Brandenburg, the count of Solms-Baruth, 32 deputies from the aristocracy, 22 from the towns, and 12 from plebeian landowners and the peasantry. In regard to military matters, Brandenburg and Pomerania conjointly form one of the seven great military subdivisions of the Prussian dominions.

The circle of Potsdam contains an area of 7833 sq. m. and 15 minor circles, viz. Berlin, East Havelland (cap. Nauen, about 3700 inhab.), Prenzlau (c. Prenzlau, 11,000), Templin, Angermünde (c. same name, 3500), Upper Barnim (c. Freienwalde, 3100), Lower Barnim, Teltow-Storkow, Jüterbock-Luckenwalde (c. Jüterbock, 4400), Zauch, Belzig, Potsdam (c. Potsdam, 25,000), West Havelland (c. Brandenburg, 13,200), Ruppın (c. New Ruppın on lake R., 7000), East Priegnitz, and West Priegnitz (c. Perleberg, 3500).

The circle of Frankfort contains an area of 7497 sq. m. and 17 minor circles, viz. Königsberg (cap. Königsberg, about 4900 inhab.), Soldin (c. Soldin, 4400), Arnswalde (c. Arnswalde, 3600), Friedeberg (c. Friedeberg, 3700), Landsberg (c. Landsberg, 9800), Küstrin (c. Küstrin, 5500), Lebus (c. Frankfort, 22,000), Sternberg (c. Zidenrig, 3900), Züllichau (c. Züllichau, 4300), Crossen (c. Crossen, 4800), Guben (c. Guben, 8800), Lübben (c. Lübben, 3700), Luckau (c. Luckau, 3700), Kalau, Kottbus (c. Kottbus, 8100), Sorau (c. Sorau, 4750), and Spremberg (c. Spremberg, 3900).

(Krause's *Manual*; Schramm, *Pruss. States*; Demian and Stein's *Pr. Monarchy*; Hassel's *Pr. Mon.*; Ungewitter; Hürschelmann; *Official Returns*, &c.)

BRANDENBURG, ELECTORATE OF. The first known inh. of this country are the Suevi, a race recorded by Julius Cæsar as the most numerous and warlike of any in Germany. The Suevi inhabited the large territory extending from the banks of the Elbe and Saale to the Vistula, and for a time held the whole region which lay between the Baltic and the Rhine and Danube. In the time

of the Emperor Augustus, Drusus, his stepson, compelled the Suevi, who dwelt in what was afterwards called the 'Middle Mark,' and the Langobardi, who peopled the districts subsequently termed the 'Old Mark,' to accept Vannius as their ruler. A few years after the birth of Christ, the Langobardi were subjugated by Maroboduus, king of the Marcomanni, at that time sovereign of Bohemia; and, A.D. 17, we find the Semnones, a branch of the Suevi, seeking for protection against their oppressor from Arminius, leader of the Cherusci. At the period of the great movement of the northern nations to the south, both the Langobardi and Suevi abandoned their native country and broke into Italy, where they established the Lombardic empire. Their deserted home now fell into the hands of the Vandals or Slavonians, one race of whom, the Vilzes, settling in the Middle Mark, founded several towns, of which Brennabor or Brandenburg was one. These new settlers were subsequently subdued by the Franks, from whom descended Prince Sunna, who reigned over the country in the beginning of the second century, and Prince Brando, who founded the new town of Brandenburg; A.D. 230. Thirty years afterwards, the Vandals having regained their superiority, repossessed themselves of the country, and maintained themselves in it for the next 500 years; but in 789 they fell under the sway of Charlemagne after a severe contest; and in 808 he appointed a count to act as his vicegerent in Brandenburg. His successor also sent two princes in 823 to fill the same office. He had likewise conquered the Vilzes, but his successors were unable to maintain the conquest or prevent them from making repeated inroads into Saxony and Thuringia. At last, Henry I., king of Germany, brought the Vandals, of whom the Hevelles dwelt about the Havel and the Retharii in the Ucker-mark, under complete subjection, and in 931 appointed certain counts to watch over the Saxon borders. These were the first markgraves of Lower Saxony, or the Vandal-mark; they were also denominated markgraves of Stade, the mark having passed into the hands of the earls of Stade. The Vandals however continued to struggle for their independence in this quarter until the year 1144, when the emperor Lotharius conferred the North-mark as well as the Salzwedel-mark on Albert the Handsome (also called the Bear), count of Ascania, or Anhalt, the line of Stade having become extinct. This prince, who extinguished the dominion of the Vandals in these parts, was the first who assumed the title of Markgrave of Brandenburg; he made himself also master of the Middle-mark, Ucker-mark, and Priegnitz, either founded Berlin or raised it to the rank of a city, and built Stendal and other towns. His son Otho I. received Pomerania as a fief in addition, and was the first arch-chamberlain of the German empire. His wife was interred in a vault of the cathedral church of Brandenburg, and the stone under which her remains are deposited has the words 'Judith, the gem of the Polacks,' still legible upon it. His successors increased their patrimony by the acquisition of the New Mark, Lebus, Sternberg, Lower Lusatia, and other districts; and they were the first who set about reclaiming the wastes and swamps of their dominions and cultivating them. Their line terminated in the person of Markgrave Henry, A.D. 1320, whose death threatening the dismemberment of Brandenburg by conflicting claimants, Lewis of Bavaria, then emperor, declared it a lapsed fief of the empire, and bestowed it upon his son, Lewis the elder. This prince was, in consequence of incapacity, induced to resign the sovereignty, and was succeeded by his brother Otho, who made himself so acceptable to the emperor Charles IV., that he obtained from him a recognition of his descendants' right of succession to the electorate of the Mark, a dignity to which Charles raised it in the golden bull, declaring it the seventh electorate of the holy Roman empire.

But Otho, from his sluggish habits, was so incompetent to the business of government, and injured the country so much by his prodigality, that Charles forced him to surrender the sovereignty into his hands, and in 1373 bestowed the electoral Mark upon Wenzel, his eldest son, king of Bohemia; and when Wenzel was raised to the dignity of king of the Romans, he made it over to Sigismund, his second son. This prince's non-residence and unconcern involved the country in confusion, and its affairs growing worse after he had ascended the imperial throne of Germany, he made over the electoral Mark to his cousins, Jobst and Procopius, princes of Moravia, and the New Mark to the Teutonic order, in pawn for monies lent. The electoral Mark having lapsed by the decease of Jobst, Sigismund

pledged the electoral Mark for a sum of 400,000 guildens to Frederic, burgrave of Nuremberg, who was of the house of Hohenzollern, made him elector, and in 1417 conferred upon him the dignity of arch-chamberlain of the empire, as well as full possession of the electorate for himself and his heirs. With this prince began a race of sovereigns whose talents and wisdom have elevated Brandenburg and its subsequent acquisitions to a distinguished rank among the monarchies of Europe. Having under the name of Frederic I. made himself respected both at home and abroad for 23 years, he was, in 1440, succeeded by Frederic II. 'of the Iron Teeth,' his son, who got back the New Mark from the Teutonic knights for 100,000 guildens, and not only added the towns and dependencies of Kottbus, Pritz, Somersfeld, Bobersberg, Storkow, and Berskow, to his dominions, but established his right as lord paramount of Pomerania and as heir to the Mecklenburg domains. In 1471 he was succeeded by his brother, Albert Achilles or Ulysses, one of the most distinguished commanders of his day; but in 1486 Albert's ill state of health induced him to transfer the electoral dignity, together with the mark of Brandenburg, to his son, John Cicero; Ansbach to another son, and Baireuth to a third. The last dying without issue, his share fell to his brother Frederic of Ansbach, who was the founder of the elder line of the markgraves of Brandenburg, in Franconia. John Cicero was noted as much for his learning as for his wisdom and economical habits, and no less for the enormous size to which he grew; he died in 1499, and was followed by his son, Joachim (Nestor) I., a prince equally distinguished for his erudition and prudence, though a fierce persecutor of the Jews, as well as hostile to the Reformation. The earldom of Ruppin devolved to him by inheritance. It was reserved for Joachim (Hector) II., his son, who succeeded him in 1535, to introduce the reformed religion into his states; he was a great patron of learning, founded the university of Frankfurt on the Oder, erected Spandau into a fortress, built a new palace at Berlin, and became joint lord paramount over the duchy of Prussia. He was followed by John George in 1571, who inherited the new mark and principality of Crossen from his uncle, and under whom Brandenburg enjoyed continued tranquillity. To this prince succeeded, in 1598, another equally paternal sovereign, Joachim Frederic, his son, who was bishop of Havelberg, Lebus, and Brandenburg, and incorporated the possessions of his diocese with the electorate. He founded the gymnasium of Joachimsthal, now one of the best public schools in Berlin. His reign lasted from 1598 to 1608. John Sigismund, his son and successor, inherited not only a moiety of the domains of Juliers, Cleves, and Berg, but shortly before his death, the duchy of Prussia, which was at that time a Polish fief. From the year 1618, therefore, this duchy became part of the electorate, and Brandenburg and Prussia thenceforward rank as a single state. He embraced the Protestant reformed religion, but not without exciting some serious commotions in Berlin. In 1619 he was succeeded by George William, who inherited a flourishing patrimony, but by his weak conduct during the Thirty years' war and the double dealing of Von Schwarzenberg, his minister, bequeathed it to his son, the 'great elector,' Frederic William, in the most deplorable condition, exhausted and devastated by the inroads of the Swedes and their contests with the imperialists. Frederic William, who succeeded his father in 1640, speedily restored his dominions to a state of order and prosperity. One of the fruits of the treaty of Westphalia was possession of part of Pomerania, of the secularized chapters of Halberstadt, Minden, and Camin, and of part of the earldom of Hohenstein, as well as of the protectorship of Magdeburg, the actual possessor of which he became in 1680. By private compact he acquired also the remaining moiety of the territories of Cleves, &c., and of the Mark and Ravensberg. Though he alternately sided with the Swedes and Poles in the campaigns of 1657 and the following years, he succeeded in extorting from Poland a recognition of the independence of the duchy of Prussia, besides the cession of Lauenburg and Bitow. Whether as an active ally of the Low Countries against the aggression of France in 1672, or as the defender of his own dominions against the furious inroads of Sweden, Frederic William displayed a degree of skill and resolution which rank him among the first generals of his day. The victory of Fehrbellin, in 1675, forced the Swedes to retire from the electoral Mark and Pomerania, and the subsequent cam-

paign freed Prussia from their presence. At the time of his death, which occurred in 1688, this illustrious prince left the electorate in a state of renovated prosperity, and greatly augmented power and extent.* His son, Frederic III., assumed the regal dignity in 1701, under the style and title of Frederic I., king of Prussia. Frederic William evinced no little wisdom by the liberal reception which he afforded to multitudes of refugees from other parts of Germany, and to 20,000 Hugonots, whom religious persecution expatriated from the soil of France, and who introduced the silk and other manufactures into the country. He was a munificent and judicious friend to those of his subjects who had been ruined by the calamities of war; re-established the condition of many towns which the same calamities had impoverished, built numbers of villages, was a zealous promoter of agriculture and commerce, established a post-office in his dominions, erected Dinsburg into a university, founded the royal library in Berlin, and constructed the Müllrose or Frederic William's Canal between the Spree and the Oder.

—[PRUSSIA.]

BRANDENBURG, the capital of the minor circle of West Havelland, in Prussia, from which the Old Mark of B. derives its name, was in former times called 'Brennabor,' or the Burgh of the Forest: it is situated upon the Havel, which divides the old from the new town, with an island, on which stand the castle, cathedral church, and equestrian college, lying between them. Between these two quarters of the town lies a swampy district, which, from the houses being built upon piles, is styled 'Venice.' Each town is surrounded by a wall, but the new town has a rampart in addition; the old town has five gates, besides a smaller outlet for foot passengers; and the new, four gates; the streets in the first are narrow and crooked, but in the last-mentioned they are broad and straight. Inclusive of the cathedral church, there are eight churches; there is a column, called the 'Rolandsäule,' in the middle of the market-place in the new town. The whole of Brandenburg contains about 13,000 inhab. and 1400 houses; a considerable increase since the year 1816, when the numbers of the one were 10,575, and of the other 1320. It is the seat of a court of justice and a central tax-office, possesses a high school or gymnasium, a civic school, an equestrian academy, a superior female seminary (*Töchter-schule*), five elementary schools, three schools for indigent children, five hospitals and benevolent asylums, and a house of correction or poor-house (*Straf-anstalt* or *Armen-haus*). The manufactures consist of woollens, linens, brandy, beer, leather, stockings, &c.; ship-building, fisheries, and a considerable trade with the interior, are carried on; and some wine is made in the neighbourhood. The cathedral church, which has been renewed in modern times, is remarkable for its internal architecture, and the ancient church of St. Catherine for its baptismal font and library. It was once the capital of the electorate of Brandenburg, and had the right of giving the first vote in the assemblies of the provincial states, a right now exercised by the city of Berlin. It is in 52° 30' N. lat., and 12° 32' E. long. (Hassel), about 34 m. W. by S. of Berlin.

BRANDENBURG, NEW, a town in the grand duchy of Mecklenburg-Strelitz, on lake Tollen, is built in a circular shape, surrounded by a substantial wall, with some remains of ramparts and ditches, and is the chief town in the circle of Stargard. The streets are broad, and at right angles to one another; it has a castle or palace, a spacious townhall, a high school, a lower school for townsmen's sons, another for girls, an elementary school, 43 brandy distilleries, manufactures of tobacco, chemical preparations, and woollens, three cotton-print factories, and a market for wool. It contains about 660 houses and 6000 inhab. It is about 70 m. N. of Berlin, in 53° 30' N. lat. and 13° 10' E. long.

BRANDON. [SUFFOLK.]

BRANDY is the alcoholic or spirituous portion of wine, separated from the aqueous part, colouring matter, &c., by the process of distillation. This word is of German origin (*branntwein*), meaning burnt wine, or wine which has undergone the operation of fire. Although the word brandy, when used by itself, means the spirit of wine, yet some varieties of it have been manufactured and used; such are potato-brandy, brandy from carrots, pears, and other vegetable bodies containing fermentable matter: these however are all greatly inferior in flavour to true brandy. In rum, arrack, geneva, malt-spirit, &c. are compre-

hended under the name of *eau de vie*; that from wine is distinguished as *eau de vie de vin*; and in treating of brandy we shall confine our remarks almost entirely to what is meant by the term in its restricted and exact sense.

It was once a question, whether brandy or spirit existed ready-formed in wine, and, consequently, whether it was or was not produced by the operation of distilling. Mr. Brande (*Phil. Trans.* 1811-1813) proved that scarcely any doubt could be reasonably entertained of the spirit being an educt and not a product; this view of the subject was still further elucidated by M. Gay Lussac (*Ann. de Chim.* t. lxxxvi. p. 175). One of his experiments consisted in shaking wine with litharge, or oxide of lead, reduced to fine powder, until it became as limpid as water, and afterwards saturating it with carbonate of potash; the alcohol by these means separated and floated upon the aqueous portion of the wine, and was thus obtained without distillation. Another proof of the existence of ready-formed alcohol was that of distilling wine in vacuo at the temperature of 59° Fahr.; this being a lower degree of heat than that occurring during fermentation, was yet sufficiently high to give a liquor containing much alcohol. It is now, therefore, universally admitted that wine consists chiefly of alcohol, water, colouring and saline matter, and some oil. Upon an argument in the Exchequer, anno 1668, whether brandy were a strong water or a spirit, it was resolved to be a spirit. But on 25th November, 1669, it was voted to be a strong water, perfectly made. See the statute in pursuance thereof, 22 Car. II. cap. 4.

Brandy is prepared in most wine countries, as France, Spain, Portugal, &c.; that obtained from France is the most esteemed. It is procured not only by distilling the wine itself, but also by fermenting and subjecting to distillation the marc or residue of the last pressings of the grape. Various kinds of stills or alembics are employed, probably no two manufacturers use precisely the same apparatus. Some account of it may be seen by referring to the *Ann. de Chim.* t. lxxvii. p. 187, and *Ann. de Chim. et de Phys.* t. vi. p. 88.

Brandy is procured indifferently from red or white wine, and it follows as a matter of course that the stronger wine will yield the larger quantity of it. The following table, drawn up by Mr. Brande, from the results of experiments instituted for the purpose of determining the relative strength of wines, as evinced by the spirit they contain, shows the great difference which exists not only between different kinds of wine, but the strength of wine and that of some other fermented liquors, as compared with brandy of the strength mentioned below. (*Phil. Trans.* 1811-1813)

The wines employed in the experiments on which the table is founded were selected with the greatest care, both as to purity and quality. A given measure of each, saturated when necessary with potash or lime, was carefully distilled nearly to dryness; by this the colouring and saline matter were separated, and the aqueous and spirituous part of the wine distilled in combination; the bulk of the distilled product was made exactly equal to that of the original wine by the addition of distilled water. After twenty-four hours its specific gravity was determined, and thence the quantity of alcohol, by reference to Mr. Gilpen's tables.

The figures in the table express the proportion of alcohol of specific gravity 0.825, at 60°, by measure, existing in 100 parts of the several kinds of wine and other liquors:—

	Spirit per cent. by measure.		Spirit per cent. by measure.
Lissa	26.47	Madeira	24.42
do.	24.35	do.	23.51
Average	25.41	do. (Sercial)	21.49
Raisin wine	26.40	do.	19.54
do. do.	25.77	Average	22.27
do. do.	23.20	Claret	17.21
Average	25.12	do.	16.32
Marsala	26.03	do.	14.05
do.	25.05	do.	12.91
Average	25.09	Average	15.10
Port	25.83	Zante	17.01
do.	24.29	Malmsey Madeira	16.20
do.	23.71	Lunel	15.32
do.	23.39	Shiraz	13.52
do.	22.30	Syracuse	13.25
do.	21.40	Sauterne	14.22
do.	19.06	Burgundy	16.60
Average	22.96	do.	15.22

At the period the territorial surface of the electorate was nearly 25,700 sq. m. and the pop. 1,500,000.

	Spirit per cent. by measure.		Spirit per cent. by measure.
Burgundy . . .	14.53	Champ. (sparkling)	12.80
do.	11.95	do. (red) . . .	12.56
Average . . .	14.57	do. (do.) . . .	11.30
Hock	14.37	Average . . .	12.61
do.	13.00	Hermitage (red)	12.32
do. (old in cask)	8.88	Vin de Grave . .	13.04
Average . . .	12.08	do.	12.80
Nice	14.63	Average . . .	13.37
Barsac	13.86	Frontignac (Rivesaltes)	12.79
Currant wine . .	20.55	Côte Rotie . . .	12.32
Sherry	19.81	Gooseberry wine .	11.84
do.	19.83	Orange wine, average	
do.	18.79	of six samples made	
do.	18.25	by a London manu-	
Average . . .	19.17	facturer	11.26
Teneriffe	19.79	Tokay	9.88
Colares	19.75	Elder wine	8.79
Lachryma Christi	19.70	Cider (highest average)	9.87
Constantia (white)	19.78	do. (lowest do.) .	5.21
do. (red)	18.92	Perry, average of four	
Lisbon	18.94	samples	7.26
Malaga	18.94	Mead	7.32
Bucellas	18.49	Ale (Burton) . . .	8.88
Red Madeira . .	22.30	do. (Edinburgh) .	6.20
do. do.	18.40	do. (Dorchester) .	5.56
Average . . .	20.35	Average	6.87
Cape Muscat . .	18.25	Malaga	17.26
Cape Madeira . .	22.94	White Hermitage .	17.43
do. do.	20.50	Roussillon	19.00
do. do.	18.11	do.	17.26
Average . . .	20.51	Average	18.13
Grape wine . . .	18.11	Brown Stout . . .	6.80
Calcevalla . . .	19.20	London Porter (aver.)	4.20
do.	18.10	do. (Small Beer, aver.)	1.28
Average . . .	18.65	Brandy	53.39
Vidonia	19.25	Rum	53.68
Alba Flora . . .	17.26	Gin	57.60
Tent	13.30	Scotch Whiskey . .	54.32
Champagne (still)	13.30	Irish do.	53.90

Mr. Faraday (*Quarterly Journal*, vol. viii. p. 68) has given the following as the quantities of alcohol, of the strength, and at the temperature above-mentioned, contained in the wines of *Aëna*:—

	Fer Cent.
<i>Aëna</i> (red)	18.09
do. (white)	18.16
do. (Sercial)	19.00
do. (white Falernian)	18.99
do. (red do.)	20.00

It has been already stated that brandy is obtained not only from wine but also from the *marc*, or fermented pressed grapes: this brandy has a more acrid flavour than that procured from wine, which has generally been attributed to an admixture of an essential oil contained in the grape-stones. M. Anbergier (*Ann. de Chim. et de Phys.* t. xiv.) has published some experiments which tend to prove that this acrid taste is derived from an oil contained in the skin of the grape. He found that the grape-stones, distilled either with water or alcohol, yielded a liquor which had a very agreeable flavour of almonds; grapes subjected to distillation produced a weakly spirituous liquor, which had neither the smell nor taste of brandy distilled from the marc; but the skins separated from the grapes and the stones, when fermented alone and afterwards distilled, yielded a brandy perfectly resembling that from the marc. M. Aubergier afterwards succeeded in separating this oil from the marc-brand, and he found it so acrid and penetrating, that a single drop was sufficient to deteriorate several gallons of good brandy.

Although brandy is imported into England from various places in France, as from Bourdeaux, Rochelle, and Nantes, yet that of Cognac, a town in the department of Charente, is preferred to all of them; and M. Aubergier states that this, as well as that from Andraye, is of superior quality because it is obtained from white wine, fermented so as not to become impregnated with the oil of the grape-skin.

Brandy, when recently distilled, like spirit obtained from other sources, is well known to be colourless; by mere keeping however it acquires a slight colour, owing probably to some change in the properties of the soluble matter contained in it. The colour is much increased by keeping in

casks; and it is made of the required intensity by the addition of colouring-matter, as burnt sugar.

It has been mentioned that spirit, sometimes called brandy, is procurable from potatoes, carrots, beet-root, pears, &c. The spirit procured from these generally retains with great obstinacy the flavour of the substance yielding it, which circumstance renders these brandies so much inferior to French brandy.

BRANDY STATISTICS. In all wine-producing countries, a part of the produce of the vineyards is converted into brandy, and in some of those countries a part of the spirit is employed to give strength to the remaining portion of the wine. The fiery wines of Spain, Portugal, Madeira, the Cape of Good Hope, and other countries, are thus treated.

There are no certain means of knowing what proportion of the produce is distilled in different places. The only country in which, as far as we know, the estimate of this kind has been made is France, where a commission, appointed to inquire concerning the duties levied upon liquors, has given an estimate of the produce of the vineyards, and the mode of its disposal. From this it appears that about 15 per cent. of the wine is made into brandy, but as the spirit which it yields varies in quantity according to the quality of the wine from which it is made, it is not possible to state its amount with precision. It has been estimated that the quantity of brandy annually made is equal to about twenty millions of English gallons, of which about one-third is exported, leaving thirteen millions of gallons for consumption in France.

The principal exportations are made from the Charente, from Bourdeaux, and from the port of Cete in the Mediterranean (dep. of Herault). From Charente comes the brandy of Cognac, which is principally used in England, to which country three-eighths of all the shipments of French brandy are ordinarily made. About one-fourth is taken by the Americans, chiefly from Bourdeaux and Cete, and the remainder is shipped in comparatively small quantities to the French Antilles, to India, and to various countries in Europe, chiefly to the north.

Until the early part of the present century, considerable purchases of Spanish brandy were made by the English government for the use of the navy; but at that time, with the view of encouraging our West India colonies, rum was substituted. The shipments of brandy from Spain are principally made at Barcelona, whence about 11,000 pipes (about 1,200,000 gallons) are annually exported. Of this quantity 3000 pipes are sent to Cuba, 6000 pipes to the former dominions of Spain in America, and 2000 pipes to the N. of Europe.

The consumption of brandy in England was greater half a century ago than it is at present. In the five years from 1786 to 1790, the average quantity amounted to 1,731,041 imperial gallons; and in the five years from 1831 to 1835, the average has been only 1,379,547 gallons; the duty in the mean time having been advanced from 6s. to 22s. 6d. per gallon.

The quantity warehoused under the king's lock is equal to about one year's supply: three-fifths of this quantity are lodged in the docks of London. The quantity in the stocks of dealers is usually about half a million of gallons.

The quantities imported and exported, and those taken for consumption in the United Kingdom, during each of the eight years from 1827 to 1834, were as follows:—

	Imported Gallons.	Exported Gallons.	Taken for Consumption Gallons.
1827	1,724,805	623,526	1,312,067
1828	2,521,069	1,050,972	1,325,169
1829	1,994,649	661,097	1,300,746
1830	1,643,469	466,610	1,274,803
1831	1,461,897	504,172	1,235,101
1832	2,671,828	691,656	1,601,652
1833	2,623,313	793,487	1,357,211
1834	3,170,297	912,335	1,388,639

The exportations are chiefly made to India and to our colonies in N. America, in the West Indies, and Australia.

The rate of duty per imperial gallon, which was 6s. in 1787, received several small additions in 1791, 1794, and 1795, and in 1796 was raised to 10s. per gallon. In 1803 it was further raised to 16s. 7d.; in 1809, to 20s.; and in 1812, to 24s. 9d.; in the following year it was reduced to 22s. 6d., at which rate it has continued to the present time.

BRANDYWINE, a small river which rises in Chester county, Pennsylvania, and joins the Christiana, in the upper

part of the state of Delaware, about a mile from the town of Wilmington, and about 2 m. from the Delaware river, which the united stream enters on the right bank a little above Newcastle. A division of the American army under Washington, during the war of Independence, was defeated on the banks of the Brandywine, 11th Sept. 1777. The consequence of the battle of Brandywine was the occupation of Philadelphia by the British troops. The Brandywine flour-mills near Wilmington were formerly the most extensive of the kind in the U. S.; and they still enjoy a high reputation for the quality of the flour produced there. The Brandywine offers a number of favourable sites for obtaining water-power, which have been taken advantage of. Brandywine is the name of a township in Chester co. Penn. (Flint's *American Geog.*; Hinton's *U. S.*; Malte-Brun.)

BRANKA [BUCK WHEAT.]

BRANTÔME, the common designation of the French writer, Pierre de Bourdeilles, who was Lord Abbot (Abbé et Baron, or Seigneur de l'Abbaye) of Brantôme, in Guienne. Very little is known of the life of Brantôme, beyond the brief and general sketch given by himself in an epitaph which he left to be inscribed on his tomb. He was a younger son of an antient and distinguished family of Perigord, where he appears to have been born about the year 1527. Having served his apprenticeship in arms under Francis of Guise, he eventually obtained two companies of foot from Charles IX. That king, with whom he was a great favourite, also made him a chevalier of the Order of St. Michael. That of Habito de Christo was bestowed upon him by Don Sebastian of Portugal. He is supposed to have visited in the early part of his life most of the countries of Europe, either in a military capacity or as a traveller. He likewise tells us that Charles IX. gave him the office of one of his gentlemen in ordinary, and a pension of 2000 livres a year. Another dignity which he held was that of chamberlain to M. de Alençon. After the accession of Henry III., by whom he intimates that he was not held in the same estimation that he had enjoyed with the preceding king, he appears to have taken his leave of the court, and retired to his estate of Richemont in his native province. It is supposed to have been after this that he wrote his various works. He died at Richemont on the 15th (the 'Biographie Universelle' says the 5th) of July, 1614.

By his last will he charged his heirs with the publication of his works, or memoirs, as they are often collectively called, ordering that the necessary funds should be provided from the revenues of his estate; although he has known, he adds, the booksellers pay for liberty to publish books not half so interesting or so likely to be well received by the public. They did not, however, appear till the year 1666, when they were printed in eight duodecimo volumes; according to the title-page, 'at Leyden, by John Sambix the younger,' but in reality, it is said, at the Hague by the brothers Steucker. The *Biographie Universelle*, erroneously we suspect, describes this edition as consisting of ten volumes, as dated 1666-67, and as printed by one of the Elzevirs, but which of them is not stated. The works were sent to the press by Claude de Bourdeilles, Comte de Montrésor, grand-nephew of the author. Another edition appeared in 1699, and another in 1722. But the most complete edition of Brantôme is that of 1740 (not 1740-41, as stated in the 'Biographie Universelle') in fifteen volumes duodecimo, which bears the impress of the Hague on the title-page, but is said to have been actually printed at Rouen. No printer's or bookseller's name appears. The editor, who has appended some explanatory notes, was, according to the 'Biographie Universelle,' Jacob le Duchat; Watt, in the 'Bibl. Britan.,' we believe incorrectly, attributes the edition to Prosper Marchand. A reprint of it in the same number of volumes appeared in 1779 at Maastricht (but with the impress of London); and it was once more reproduced in eight volumes, octavo, in 1787, by Bastien, as a part of the collection entitled 'Mémoires pour servir à l'Histoire de France.'

Of the fifteen volumes, the first contains 'Les Vies des Dames Illustres Françaises et Etrangères'; the second and third, 'Les Vies des Dames Galantes'; the fourth and fifth, 'Les Vies des Hommes Illustres et Grands Capitaines Etrangers'; the sixth, seventh, eighth, ninth, and tenth, 'Les Vies des Hommes Illustres et Grands Capitaines François'; and the eleventh, 'Le Discours sur les Duels.' The remaining four volumes consist of pieces which had not been previously published. The twelfth contains a collection entitled 'Rhodomontades et Gentilles Rencontres

'Espagnoles,' which is stated to have been written by Brantôme in Spanish, and translated into French by Marc Phrasendorp; and two dissertations, the first 'Sur les Sermons et Juremens Espagnols,' the other 'Sur les Belles Retraites d'Armées de diverses Nations.' The thirteenth contains the author's 'Opuscules Divers,' seventeen in number, the last being his Testament, a very curious document, extending to about fifty pages. To these is added a piece entitled 'Maxims et Avis du Maniement de la Guerre,' by André de Bourdeilles, Brantôme's elder brother. The letters of André to Charles IX., Henry III., and their mother Catherine de Medici, with their answers, form the fourteenth volume of the collection; and the fifteenth is filled with a history of the family of Bourdeilles, principally taken from Dinet's 'Théâtre de la Noblesse Française,' and brought down to the time when the edition was published. In the course of this long genealogical detail there is given a list of Brantôme, which fills about eighty pages. His portrait is prefixed to the volume.

There is no English translation either of the whole of Brantôme's works, or, as far as we are aware, of any part of them. This is no doubt to be accounted for from the comparatively late date at which they appeared; had they been published half or two-thirds of a century earlier, it is probable that the extreme freedom of expression in which they abound would not have shut out Brantôme from our literature, any more than the same objection has deprived us of his equally unscrupulous contemporaries, Rabelais and Montaigne. In this respect, as well as in others, his 'Mémoires' afford us undoubtedly the most living picture that has been preserved of the age in which he lived, and of the odd system of manners and of morality then prevalent. No mere statement of facts which may be gathered from more formal historians can convey the vivid impression which this writer's whole style and tone of sentiment give us of the entirely different light in which licentiousness in both sexes was then viewed from that in which we now regard it. It seems never to enter Brantôme's head that either man or woman can be considered dishonoured, or to have forfeited a character of virtue, by the most lavish indulgence in what he calls gallantry. The most abandoned of the female world, whose lives he details, are spoken of by him as but illustrious ladies and good Christians. So complete is his abstinence from every expression that might denote a sense of there being any thing to blame in the indulgence which he has recorded, that he has been suspected by some critics of composing his works with a determined purpose of undermining the belief of his readers in the common distinctions between virtue and vice. This however is probably an unfounded hypothesis. It can hardly be said that Brantôme's moral creed on the subject of gallantry, strange as it appears to us, is really different from that which was generally in fashion when he wrote, and had been so for ages before. He is not more lax in his judgments upon matters of this kind, for instance, than his predecessor Froissart, or, as we have already observed, than his contemporary Montaigne. In his praises of beauty and of knightly prowess and courtesy, Brantôme writes with warm and eloquent enthusiasm.

BRASENOSE COLLEGE, Oxford. The precise date of the foundation of this college is not known. The plan for it was concerted in 1507-8, between William Smyth, bishop of Lincoln, and Richard Sutton, Esq., afterwards Sir R. Sutton of Prestbury, in Cheshire, a member of the privy council to King Henry VII.; and in 1508 they obtained from University College a lease of two of the halls of Oxford, Brasenose Hall and Little University Hall, with their gardens and appurtenances, for the term of ninety-two years, at the annual rent of 3*l.*; and it was not until the expiration of the above lease that an equivalent estate was made over to University College, and Brasenose College obtained the freehold. On these premises the college first rose. Other messuages or houses of education for students adjoining were subsequently purchased; the first instance Salisbury Hall, to which were afterwards added Little Edmund Hall, Haberdasher's Hall, Bark Hall, Staple Hall, and Glass Hall, the chief of these rooms between what is now Lincoln College-lane and the West street. The present lodgings of the principal were erected on the spot where Haberdasher's Hall stood. The hall, from which the college took its name, was of great antiquity. In the thirteenth century it was known as

same name, which was unquestionably owing to the circumstance of a nose of brass affixed to the gate. As the hall must have had a name before it got one from this circumstance, perhaps we may conclude that the name Brasenose was originally a kind of nickname.

It appears that a society was formed almost as soon as the college was projected. We find a principal in the month of June, 1510. The charter of foundation granted to Bishop Smyth and Richard Sutton, Esq., is dated Jan. 15th, 1511-12: and it is supposed that the society became a permanent corporation on the feast of St. Hugh, Nov. 17th, 1512, or perhaps a little earlier. According to the charter, the society was to consist of a principal and sixty scholars, to be instructed in the sciences of sophistry, logic, and philosophy; and afterwards in divinity, and they might possess lands, &c., to the yearly value of 300*l.* beyond all burdens and repairs. The number of fellows, however, was not completed until their revenues, by being laid out on land, began to be certainly productive.

The estates which Bishop Smyth bestowed on the college were chiefly two: Basset's Fee, in the environs of Oxford, which formerly is supposed to have belonged to the Bassets barons of Headington; and the entire property of the suppressed priory of Cold Norton, with its manors and estates in Oxfordshire and Northamptonshire. It was sold to Bishop Smyth, by the convent of St. Stephen's, Westminster, for eleven hundred and fifty marks.

The estates given by Sir Richard Sutton were, the manor of Burgh, or Borowe, or Erdeborowe, in the parish of Somerby, in the county of Leicester, and other estates in the same parish and neighbourhood; an estate in the parish of St. Mary-le-Strand, London, which in 1673 was sold to the commissioners for enlarging the streets after the great fire, for the sum of 1700*l.*, and with this an estate was purchased at Burwardescot or Burscot, in Oxfordshire; which was subsequently exchanged for other lands at Stanford, in the Vale of White Horse. Sir Richard Sutton gave also the manor of Cropredy, in the county of Oxford, and certain lands there, and an estate in North Ockington, or Wykyndon, in the county of Essex.

In the same year, by indenture with Sir Richard Sutton, the society agreed to keep an anniversary for ever for Bishop Smyth and Sir Richard Sutton, on the days of their respective decease. Sir Richard Sutton's last benefaction to the college, except that of 5*l.* for building a wall, was an estate in Garsington and Cowley, in Oxfordshire, of which he put the college in possession in July, 1522.

Bishop Smyth composed a body of statutes before the year 1513, but they are not now known to exist. In his will he devolved to his executors the business of correcting and amending these statutes; and accordingly a new code, signed and sealed by four of his executors, was given to the college, and is still preserved. In the year 1521-22 it underwent a complete revision, and was ratified by the seal of Sir Richard Sutton, the surviving founder. Of this however a transcript only remains. In forming these statutes considerable use was made of those of Magdalen College, which had been borrowed from Wykeham's statutes for New College.

In these last statutes the college is recognised as commonly called 'The King's Haule and Colledge of Brasenose, in Oxford,' to consist of a principal and twelve fellows, all of them born within the diocese of Coventry and Lichfield; with preference to the natives of the counties of Lancaster and Chester, and especially to the natives of the parish of Prescott in Lancashire, and of Prestbury in Cheshire. Besides those twelve, there were to be two fellows, masters or bachelors of arts, natives of the diocese of Sarum, or Hereford, agreeably to the intent of a composition between Edmund Audley, bishop of Salisbury, and the college, for that purpose; but for some reason, not now known, this benefaction never took place.

In addition to the bounty of their two founders, this society soon obtained numerous benefactions. The first permanent benefaction was that of Elizabeth Morley of Westminster, widow, who died about 1524. Sir Richard Sutton, at her request, had settled on the college in 1512 the manor of Pinchepolles, &c., in Berkshire. John Williamson, clerk, gave 200*l.* in 1521, to purchase lands for the maintenance of two fellows. John Elton, alias Baker, canon of Salisbury, founded another fellowship in 1528. William Porter, who had been warden of New College, founded a fellowship in 1531. Edward Darby, archdeacon

of Stow, left 120*l.* to purchase lands, &c. for the maintenance of a fellow in 1538. In the same year Dr. William Clyfton also gave lands for the maintenance of a fellow. Another fellowship was settled on the college by Brian Hygden, dean of York, in 1549, for a native of York-shire and Lincolnshire, alternately. The concluding fellowship, which is the twentieth, was founded by Mrs. Joyce Frankland, a distinguished benefactress not only to this and to Lincoln College, but to Caius and to Emmanuel College, in Cambridge. Humphrey Ogle of Chalford, or Salford, in Oxfordshire, archdeacon of Salop, provided exhibitions in 1543 for two scholars born in Prescott, or in the diocese of Chester or Lichfield; and in defect of such, 'any fit persons born in the king's dominions.' John, Lord Mordaunt, in 1570, founded three scholarships. Of Alexander Nowell, the learned dean of St. Paul's, it has been observed, that he came to this college in the thirteenth year of his age, resided thirteen years, founded thirteen scholarships, and died on the 13th day of February, 1601-2, at the advanced age of ninety-five. Joyce Frankland, before mentioned, James Binks, alias Stoddard, George Palyn, Dr. Samuel Radcliffe, John Milward, John Cartwright, Esq., of Aynho, Anne Walker, Hugh Henley, Thomas Church, Richard Read, Sarah duchess-dowager of Somerset, Dr. Thomas Yate, William Hulme, Esq., Dr. William Gribaldston, and others, have either founded or augmented scholarships and exhibitions.

The scholarships founded by the Duchess of Somerset amount at this time to twenty in number. They are appropriated to youths educated at the grammar-schools of Manchester, Marlborough, and Hereford, with a permission to the society, in respect of four, to accept of birth in the counties of Hereford, Lancaster, and Chester as a qualification, in defect of candidates educated in those schools. Mr. Hulme gave lands in and near to the town of Manchester to certain trustees resident in that neighbourhood, for the support of four poor bachelors of arts, for a period of four years from the date of that degree. Some of these lands having been subsequently built upon, Brasenose-street (Manchester) standing upon a part of them, and all in various ways greatly improved in value, the trustees, who are noblemen and gentlemen of the counties of Lancaster and Chester, have been incorporated by act of parliament; whereby they have obtained a power of purchasing advowsons, and presenting to the livings. They are bound however to present such priests as are, or have been exhibitioners upon Mr. Hulme's foundation. The nominators to the exhibitions are the warden of Manchester and the rectors of Prestwich and Bury in Lancashire, for the time being; who again can nominate none but members of Brasenose College. The part which the society take in the foundation is only to supply objects for the founder's bounty, and to name the lecturer in divinity. The advowsons which have been purchased are entered in the college list, as the most convenient mode of giving information to the exhibitioners. The exhibitions are now fifteen, exceeding 100*l.* per annum each; and the sum of 35*l.* is annually expended in the purchase of books for each exhibitioner.

In addition to these and various other minor benefactions, lectureships have also been endowed, since the foundation of the college, in philosophy and humanity, in Greek, in Hebrew, and in mathematics.

The actual society of Brasenose College at present consists of a principal and twenty fellows. There are also thirty-two scholarships, and fifteen exhibitions. The number of members, resident and non-resident, upon the college books, according to the Oxford Calendar of 1835, is 396. The Bishop of Lincoln is their visitor.

Among the more eminent members of this college were Laurence Nowell dean of Lichfield, Fox the martyrologist, Sir Henry Savile, Sir Henry Spelman, Brerewood the mathematician, Humphrey Lhuyd the Welsh historian, Sir John Stradling; Erdeswick and Sir Peter Lyncester the Cheshire antiquaries, Lord Chancellor Egerton, Robert Burton, author of the 'Anatomy of Melancholy,' Sir William Petty, Elias Ashmole, John Prince, author of 'The Worthies of Devon,' and Dr. Whitaker, the author of 'The History of Manchester.'

The ecclesiastical patronage of this society consists of thirty rectories, two chapelries, and a lectureship, producing in all an income of about 13,439*l.*

The original edifice of Bishop Smyth and Sir Richard Sutton is still visible in the large entrance quadrangle; but

a third story was constructed over a great part of it, with dormer windows, &c., about the time of James I., for the accommodation of additional members. The hall and tower gateway however retain much of their former grandeur and picturesque effect; and the decayed parts of the latter might be easily restored from Loggan's print of 1675; at which time it appears to have been in good preservation, and the tracery of the windows entire. At that date, and till the year 1770, the lodgings of the principal were on each side of the gateway, and over it, according to the ancient practice. The present frontage of the college occupies nearly the whole of the western side of the Radcliffe-square; and the site of it, including the principal's house, extends southward to the High-street.

The hall, or refectory, on the south side of the principal quadrangle, is lofty and well proportioned. Its windows are partly embellished with the arms of the founders and benefactors, whose portraits also adorn the walls. Among them is the original portrait of Dean Nowell.

The first chapel used by the society was a small oratory over the buttery, since converted into rooms. The foundation stone of a new chapel was laid June 26, 1656, and it was finished in about ten years. It is built upon the site where Little Edmund Hall stood. Dr. Samuel Radcliffe, the principal at the time it was erected, contributed 1850*l.* to the building.

The contents of the Old Library, which stood at the north-west corner of the large quadrangle opposite the original chapel, were transferred to a new library, built over the cloister, between the chapel and the south side of the inner court, and finished in 1663. The design of this building is attributed to Sir Christopher Wren; the interior was refitted under the superintendance of Mr. Wyatt, in 1780.

The present principal, Ashurst Turner Gilbert, D.D., elected in 1822, is the eighteenth from the foundation of the college. (Wood's *Colleges and Halls of Oxford*, by Gutch; Churton's *Lives of the Founders of Brasenose College*, 8vo., Oxf., 1800; Chalmers's *Hist. of the Colleges and Halls of Oxford*, 2 vols. 8vo., Oxf., 1810; Ingram's *Memorials of Oxford*, 4to.; *Oxford Univ. Calendar* for 1835.)

BRASIDAS. The first mention of this eminent Spartan occurs in the first year of the Peloponnesian war, in which he performed a very gallant action in throwing himself at the head of a body of troops into Methone when besieged by the Athenians, 'and for this exploit was the first that was praised at Sparta in this war' (*Thucyd.* ii. 25). In the third year of the war he was associated with Cnemus in the command of the Peloponnesian fleet, was present in the second battle in which the Lacedæmonians were defeated by Phormion, and took probably a leading part in a well-contrived scheme for surprising the Athenian port of Piræus, which failed, as Thucydides intimates, chiefly from the want of due energy in its execution (ii. 85—94). In the fifth year he was associated with Alcidas in the command of the Peloponnesian fleet. In the seventh year he commanded a ship in the armament which attacked the fort of Pylos, newly erected by Demosthenes on the mainland opposite the island of Sphacteria; distinguished himself by superior bravery, and being severely wounded, and fainting, he dropped his shield into the sea, which was picked up and made part of the Athenian trophy. This little incident is worth relating, because the loss of the shield was considered disgraceful. It does not appear that Brasidas suffered in reputation from this accident (iv. 11, 12).

Soon after a request for help was preferred to Sparta from some cities in the Chalcidian peninsula, which had thrown off their alliance, or rather their allegiance to Athens. Brasidas was already so well known, that the Chalcidians requested that he might be the leader of any force which should be sent to their assistance; and the text of Thucydides (iv. 80) seems to indicate that no one contested with him the command of a distant and uncertain enterprise. The Lacedæmonians gave him 700 heavy-armed foot; the rest of his army, consisting of Peloponnesian mercenaries, he was collecting in the neighbourhood of Sicyon, where he had the opportunity of protecting and preserving to the Peloponnesian alliance the city of Megara, attacked by an Athenian army (iv. 70—74). This was early in the eighth year of the war. In the same summer he led his army of 1700 heavy-armed foot (containing altogether about 4000 soldiers) to Macedonia. One chief difficulty of the undertaking was to reach the scene

of action. The Athenians commanded the sea, and the land route lay through Thessaly, a difficult and an unfriendly country. But by the assistance of a few principal Thessalians, who acted as his guides, and by the decision, rapidity, and address of his own movements, he eluded the difficulties which he had reason to apprehend, and reached the Macedonian frontier.

We can only give an outline of this expedition, which is but an episode in the Peloponnesian war. The thing chiefly to be remarked is the mild conduct of Brasidas, as compared with the haughtiness and severity usually manifested by Spartan commanders towards their subject allies. Thucydides observes that Brasidas did the Lacedæmonians great service by his equity and moderation, which at that time induced many cities to go over to them; and afterwards, even after the Sicilian war, 'the wisdom and virtue of Brasidas, to some known by experience, by others believed upon report, was the principal cause which made the Athenian confederates affect the Lacedæmonians; for being the first foreign commander (i. e. first in this war) and esteemed in all points for a worthy man, he left behind him an assured hope that the rest also were like him' (iv. 81). The first fruits of his appearance in Chalcidice were the revolt of Acanthus and Stagirus from Athens; and this success, before winter was completely set in, was followed by the acquisition of Amphipolis on the Strymon. This was the heaviest loss which could have befallen the Athenians, inasmuch as it was the most important of their Thracian dependencies, and they derived from it a considerable revenue, and plenty of timber for shipbuilding, which the soil of Attica did not supply.

After the capture of Amphipolis, Brasidas meditated building a fleet in the Strymon, and he requested reinforcements from Sparta, which it certainly would have been wise to have sent. But these were denied, partly because the leading men were jealous of him, partly because the government was intent on concluding the war, and obtaining the freedom of the Lacedæmonians made prisoners in Sphacteria. Accordingly, in the following spring in the ninth year of the war, a truce was concluded, which provided that each party was to retain what it then possessed. It became a question however to which of them Scione, which had surrendered to Brasidas just about the ratification of the truce, did belong; and Brasidas refused to give it up to the Athenians. In this he was wrong, according to Thucydides, who says (iv. 122) that Scione was in the hands of the Athenians when the truce was signed, and two days afterwards; but he probably was ill pleased with the negotiation, and must certainly have been reluctant to deliver up that city, by which he had been eminently trusted and honoured, to the certain revenge of the Athenians. This circumstance, and the revolt of Mende, a neighbouring city, which he also received into the alliance of Sparta, alleging that the Athenians had already infringed the terms of truce, led to the continuance of hostilities on the coast of Thrace. The Athenians passed a savage decree to take Scione and put to death the inhabitants, and sent Nicias and Niceratus with an army to enforce it. The year passed without any decisive occurrences; but in the following spring (B.C. 422) the Athenians sent out Cleon to assume the command, who speedily undertook the siege of Amphipolis. Brasidas superintended the defence. In the question of his troops Cleon had the advantage; the numbers were about equal. But this superiority was more than compensated by the difference of talent in the generals. In short, Cleon was puzzled; and Brasidas, who watched his movements from the city, took at once advantage of a false manoeuvre, and led his troops to battle, in which the Athenians were completely defeated, but he himself received a mortal wound. He was buried in the public-place of Amphipolis at the public expense, was worshipped as a hero, and, as a still higher mark of respect, it was ordained that he, instead of Agnon the Athenian, should thereafter be honoured as the true founder of the city and colony.

If Brasidas had lived he probably would have become one of the most remarkable men in the history of Sparta. His military talents were great; his temper politic and conciliatory; his accomplishments considerable, at least in Sparta, for Thucydides pithily observes, that, 'for a Lacedæmonian, he was not unable to speak' (iv. 84). That he was held in high respect throughout Greece may be gathered, not only from the testimony of Thucydides above

quoted, but from the expression put into the mouth of Alcibiades by Plato, in the 'Banquet,' that 'such as Achilles was, we may conjecture Brasidas to have been.'

BRASS, A_2 s of the Romans, is an alloy of copper and zinc, which has been known and used from the remotest antiquity; it is now extensively employed both for useful and ornamental purposes.

The direct method of forming brass is by melting together its constituent metals; but it was manufactured long before zinc was obtained in its metallic form. Calamine, an ore of zinc, was mixed with copper and charcoal, and the zinc being, by the well-known action of the carbonaceous matter, reduced to the metallic state immediately combined with the copper, without separately exhibiting metallic properties. In Germany brass appears to have been made for centuries before the manufacture was introduced into England: this is stated to have been done by a German, who established works at Esher in Surrey in the year 1649.

When the requisite furnaces have been erected, the next step in the process is that of reducing copper to a convenient form for ensuring its ready combination by extending its surface. This is effected by pouring the melted metal into water; by which process what is called *shot copper* is obtained, in pieces varying in size from that of small shot to that of a bean.

The next process is to prepare the calamine, which is a carbonate of zinc. This is first broken into small pieces, and then heated to redness in a reverberatory furnace. In this way, by the loss of carbonic acid and moisture, one ton of calamine is generally diminished to about twelve cwt., and it is when cold reduced to a fine powder and washed.

The materials being thus prepared, 45 pounds of the shot copper, 60 pounds of the powdered calamine, and a quantity of powdered charcoal equal to it in bulk, are carefully mixed and put into eight earthen crucibles, this being the number placed in each furnace, made of a peculiar form. There is also commonly mixed with these ingredients a quantity of scrap brass. When the fire has been continued for about seven or eight hours, the operation is finished. Supposing 40 pounds of scrap brass to have been added to the above-mentioned quantities of the ingredients, a plate of brass is obtained by pouring the metal into granite moulds, which is generally about $5\frac{1}{2}$ ft. in length and weighs about 108 pounds. This plate is used for rolling into thin sheets called latten. Very frequently the metal is poured into cast-iron moulds, by which bars about eight inches in length are obtained: these bars are employed by those who cast brass into small goods, or who mix it by melting with additional quantities of copper so as to produce metal having different shades of colour, as tombac, pinchbeck, &c. Sometimes blende, or the sulphuret of zinc, is employed instead of calamine; it is first roasted to dissipate the sulphur, and there remains an oxide.

It has been stated that brass is now sometimes made by the direct union of the metals; but this process requires great caution, for if the heat be too suddenly applied, or if it be raised too high before the metals begin to unite, then the zinc, on account of its great affinity for oxygen, burns, and thus not only is loss occasioned, but the quality of the product is injured by it, owing to the deficiency of zinc.

Brass for various purposes is made of different proportions of the two metals, and consequently possesses different qualities; its general properties are, that it has a well-known fine yellow colour, is susceptible of receiving a high polish, and is only superficially acted upon by the air. It is very malleable and ductile when cold, and consequently may be beaten into thin leaves and drawn into fine wire: at a high temperature it is brittle. The specific gravity of brass is greater than that deducible from the specific gravities of the metals which constitute it, as shown by the following statement.

Brass, containing copper 70 and zinc 30, would give a calculated specific gravity of 8.390; but by experiment it is found to be 8.443: when the proportions are copper 80 and zinc 20, the calculated is to the actual density as 8.490 to 8.560. On comparing the composition and density of different kinds of brass, it appears that the density increases with the proportion of copper, as might indeed be expected, and that it is sometimes even equal to that of the copper itself.

Brass is more fusible, sonorous, a worse conductor of heat, and harder than copper. It is readily turned in a lathe, and is consequently well adapted not only for philosophical

instruments, but those used in manufacturing processes and for domestic purposes. In the state of wire it is most extensively employed in pin-making, and for various other purposes; the thin leaves into which brass is made by hammering are called Dutch metal or Dutch gold.

Authors differ widely as to the best proportions of copper and zinc for making brass. It is stated, in the supplement to the 'Encyclopædia Britannica,' that one part of copper and two parts of zinc are the best proportions for common brass; and that one part of each forms prince's metal of a fine yellow colour. Mr. Parkes, *Essays*, p. 210, states (and we believe he obtained his information from an accurate source) that the most useful proportions are two parts of copper to one part of zinc, which are not far from one equivalent of each metal. Berthier's analysis of the brass wire of Jemappes confirms the probability of this statement, for he found it to consist of

Copper	.	.	64.2
Zinc	.	.	33.1
Lead	.	.	8
			—
			98.1

The small quantity of lead is of course to be regarded as an accidental admixture. According to Dr. Thomson, also, Bristol brass consists of

Copper	.	.	65.15
Zinc	.	.	34.85
			—
			100

Some old Dutch brass, analysed by the same chemist, which he states was much approved of by watchmakers, yielded

Copper	.	.	79.55
Zinc	.	.	34.45
			—
			100

In concluding this article, we shall give the method of analysing brass proposed by Mr. Keates, in the 'Annals of Philosophy,' vol. iii. N.S., p. 326.

Dissolve the brass in dilute nitric acid, add a little sulphuric acid and evaporate to dryness, redissolve in excess of dilute sulphuric acid, dilute the solution and boil pieces of polished iron in it, until the solution becomes nearly colourless, filter it while hot, wash the precipitated copper with dilute sulphuric acid, and afterwards with boiling water: this when dried is to be put into a crucible, covered with charcoal powder and melted; the copper being cleansed from any adhering charcoal, is then to be weighed.

The filtered solution, from which the copper has been separated, is to be boiled with nitric acid to peroxidize the iron; neutralize the acid with carbonate of soda, and precipitate the iron by ammonia, using an excess of the latter so as to redissolve the oxide of zinc at first precipitated; filter the solution and add to it muriatic acid, evaporate to dryness and heat the dry mass in a platina crucible; to drive off the muriate of ammonia, dissolve the residuum in dilute muriatic acid, and precipitate by carbonate of soda; the precipitate, after being washed and dried, is heated to redness: every 40 parts of this precipitate are equal to 32 parts of metallic zinc.

Another and more simple method is the following:—Dissolve the brass in a considerable excess of nitric acid; pass sulphuretted hydrogen gas, also in excess, through the solution. The copper only is precipitated, which is to be treated with nitric acid, the sulphur separated by filtering, and the peroxide of copper precipitated by boiling with soda: 80 grains of this precipitate indicate 64 grains of copper.

The solution remaining after the separation of the sulphuret of copper is to be boiled to expel the excess of sulphuretted hydrogen, and then precipitated by carbonate of soda: the precipitate, when ignited, is oxide of zinc, 40 grains of which indicate 32 grains of metallic zinc. (Smith in *Lond. and Edin. Phil. Mag.* vol. viii.)

BRA'SSICA, a genus of Cruciferous plants, comprehending, among other species, the cabbage, cauliflower, brocoli, borecole, rape, turnip, colza, and the like. As these are objects of horticultural or agricultural interest only, they will be spoken of under their respective heads. We shall in this place consider Brassica in a botanical point of view only. It is distinguished from other Cruciferous genera by the following characters:—Its seeds contain an embryo, the radicle of which is embraced in the concavity of the folded cotyledons. Its pod is long, slender, and many-

seeded. The seeds are spherical. The calyx is equal at the base and slightly spreading; the petals are undivided; the stamens entire.

In its wild state the cabbage (*Br. oleracea*) is met with in abundance upon the cliffs of many parts of Europe; commonly on the S. part of European Turkey, especially about Mount Athos, on the coast of Kent near Dover, and on that of Cornwall, Wales and Yorkshire. In other places it forms a broad-leaved glaucous plant, with a somewhat woody stem, having but slender likeness to its cultivated progeny; and it is difficult to conceive by what original discovery the species was brought under the influence of domestication so as to have been prepared for the numerous changes and improvements it had to undergo before the races of cabbages, savoy, borecoles, cauliflowers and brocolis could have been founded.

Swedish turnip is supposed to be *Br. campestris* in a cultivated state, a plant with somewhat hispid, lyrate, glaucous leaves, found wild in the S.W. parts of Europe, and apparently also in many parts of England, by the sides of rivers, by ditches, in marshes and elsewhere. It is believed to have been the γόνγυλις (góngyulis) of Theophrastus.

Rape, *Br. Rapa*; Colza or Coleseed, *Br. Napus*, are other species the native country of which is unknown. Common turnips are considered by botanists to be cultivated varieties of the former. With some it is a matter of doubt whether the whole of these supposed species are not mere varieties derived from one common stock, in consequence of their intermixing so freely with each other that it is extremely difficult to keep their races truly distinct.

BRAVA, the south-westernmost of the Cape Verde Islands, lies eight miles to the W.S.W. of Fogo. The island is high, and its mountains rise one above another like pyramids, though, compared with Fogo, it appears low, and its summits are generally covered by a dense atmosphere. The climate is temperate and healthy, and the soil fertile, producing a large quantity of Indian corn, beans, and all sorts of refreshments, but little wood. There is also an abundance of salt, and more saltpetre is procured here than on any of these islands. Brava has several bays and roads, but none safe for vessels of burden. The best of them, called Furna, lies at the N.E. end of the island, where small vessels may lie sheltered from all winds but the S.W. Along the whole coast there is generally a heavy surf, and landing is bad. It is only frequented by small vessels from the other islands for archil, grain, and salt. The natives are few, and all blacks. They are harmless, hospitable, and generous.

To the N. of Brava, about five or six miles, are two rocky islets called Rombo, or Romes Islands, which are connected with each other by a reef, but the passage between them and Brava is clear. The shape of the island is nearly oval, six miles long north and south, and about four miles broad. The south point lies in $14^{\circ} 46' N.$ lat. $24^{\circ} 46' W.$ long.

(Flinders' and Kruzenstern's *Voyages; Voyage of the Leven.*)

BRAVU'RA, in music (Ital. *courage, intrepidity*), an air consisting chiefly of difficult passages,—of divisions, in which many notes are given to one syllable, therefore requiring great spirit, much *bravery*, in the performer. (See, under the word AIR, *Aria di Bravura.*)

Compositions of this sort have, generally, no object but the display of the singer's force, volubility, and distinctness of articulation; though some few fine airs of the kind, by Handel, Hasse, Piccini, Guglielmi, Cimarosa, Mozart, &c., still keep alive a taste for this species of vocal music; and thus inferior works in the same style continue to be tolerated.

BRAUNSBURG, a minor circle of the circle of Königsberg, in the prov. of Eastern Prussia. Its area is about 378 sq. m.; it is traversed by the Passarge, a riv. of some note, whose tributaries, the Walsh and Drewenz, also irrigate it; and though it contains extensive tracts of forest, it is well adapted for the growth of grain and flax, both of which are raised in considerable quantities. Besides this source of wealth, it possesses good fisheries along its N.W. shores on the Frische Haff, produces much timber, rears cattle, and manufactures linen yarn, linens, woollens, leather, &c. It contains 4 towns, 178 vil., and 172 par., and in 1831 had 37,348 inh.; in 1826, 35,354. The seat of local administration is at Braunsberg, a walled town on the Passarge within about 5 m. of its efflux into the Haff, in $54^{\circ} 19' N.$ lat., and $19^{\circ} 54' E.$ long.: it is divided by the riv.

into the old and new towns. The bishop of Ermeland (a district which was formerly composed of the circles of Braunsberg and Heilsberg) has his residence here; the old castle is used in part for public offices. Braunsberg possesses a lyceum, with faculties of Roman Catholic divinity and philosophy, a Roman Catholic gymnasium and seminary for candidates for the priesthood, a normal school for educating teachers, 4 Roman Catholic churches and 1 Protestant, an asylum for 12 widows, and 3 hospitals. The number of houses is about 700, and its pop. in 1831 was 7141, showing an increase of 1355 since the year 1817. Woollens and linens, as well as leather, are manufactured. The trade of the town consists principally in yarn, grain, ship-timber, and grain. The Passarge is navigable from Braunsberg to its mouth. In this circle lies Frauenburg, on the Haff, at the foot of the Domberg, on which the cathedral of Ermeland and the residences of the members of the diocesan chapter are situated. It is an open town with a church, had 2021 inh. in 1831, makes yarn, woollens, pottery, &c. The remains of Copernicus, who was a member of the chapter and died here in 1543, were deposited in the cathedral. Frauenburg is noted for a tower which once formed part of an aqueduct constructed by him. Mehlsack, another town in this circle, is situated on the Walsch, has 2 Roman Catholic churches, and had in 1831 a pop. of 2617 souls. It makes woollens, yarn, hats, leather, &c.

BRAUWER, or BROUWER, ADRIAN, was born, according to some authors, at Oudenaarden, but, according to others, at Haarlem, of poor parents. He was apprenticed to Frank Hals; who, it is said, finding him uncommonly skilful, made money by his productions, while he kept him confined and almost starving at home. Brouwer excelled in painting such scenes as his irregular mode of living made him most familiar with. The singular recklessness of his conduct led him into many ludicrous and disagreeable situations. It is related of him that, being in Antwerp during the wars in the Low Countries, his vagabond appearance caused him to be apprehended as a spy, and he was put in prison. It so chanced that he was imprisoned in the same place with the Duke d'Arenberg, who was intimate with Rubens, and frequently visited by him. Discovering his fellow-captive to be an artist, the duke asked Rubens to procure him materials for painting. As soon as he had them, Brouwer set to work, taking for his subject a group of soldiers playing at cards in the prison. D'Arenberg showed the picture to Rubens, who immediately recognized the work of Brouwer, and offered 600 guilders for it. The duke, however, would not part with a thing he found so valuable; but, keeping it for himself, presented the painter with a larger sum. Rubens exerted his interest, and procured the liberation of his brother artist, took him home with him, clothed him, and maintained him for some time. But a life of quiet was not suited to Brouwer, and he quitted Rubens again to plunge into excesses, which shortly after terminated his existence in an hospital, at the age of 32, in the year 1640.

His subjects are taken from low life, of the most unpleasing class; but from the extraordinary skill displayed in the execution, the excellent colouring, the correct drawing, and the life and character of the design, they fetch a high price.

BRAY. [BERKSHIRE.]

BRAY. [WICKLOW.]

BRAZIL comprehends the E. portion of S. America. Its most N. point, at the sources of the Rio Branco, nearly reaches $5^{\circ} N.$ lat.; and the mouth of the Rio Oyapock, which divides it from French Guiana, extends nearly as far N. The most S. boundary-line cuts the lake of Mirim, in $32^{\circ} 30' S.$ lat. The most E. projection, Cape Augustus, is in nearly $35^{\circ} W.$ long. Brazil extends W. to the river Hyabary or Yavari, where its boundary-line falls in unknown countries, and probably passes $70^{\circ} W.$ long.

Brazil extends from N. to S. above 2600 m., and from E. to W. about 2400 m.; its surface is calculated by some at 3,000,000, by others at only 2,500,000 sq. m. According to the first calculation it is about fourteen, according to the second, about twelve times as large as France.

Its vast extent brings it in contact with all the countries of South America, except Chili and Patagonia. At its S. extremity it borders on the republic of Uruguay Oriental, or Banda Oriental, and on the republics of Corrientes and Las Misiones, both of which are considered as part of the

federal republic of La Plata. From Paraguay it is separated partly by the Rio Parana and its tributary Ivinheima, and partly by a range of high lands which terminate on the banks of the Paraguay. The boundary-line passes that riv., and runs in a N.W. direction along the unknown portion of Bolivia, till it meets the Rio Guaporé (about 13° S. lat.), by which river Brazil is separated from Bolivia as far as its confluence with the Mamoré, which latter continues to form the boundary-line up to its junction with the Beni. At this point begins the boundary-line between Brazil and Peru, but it traverses countries entirely unknown, and is supposed to run due W. along the parallel of 11° S. lat., as far as the Hyabary, and then to the N. along the course of this riv. to its junction with the Rio Amazonas. The boundary-line between Ecuador and Brazil runs due N. about 68° 40' W. long. from the Rio Amazonas, to nearly 1° N. lat., and thence E. to the Rio Branco, a tributary of the Rio Negro. The remainder of the boundary-line runs N.E. along the mountain range which separates the upper branches of the Rio Branco from those of the Orinoco, and turns at the sources of the former to the E., extending hence along the Sierra Baracayna to the sources of the Mazarony, where Brazil begins to border on the British settlements in Essequibo and Demarara. This boundary in all its extent is formed by a mountain-range. It runs at first S.S.E. and then E., until it joins the Dutch colony of Surinam, and afterwards the French settlement of Cayenne. Where the mountain-range ceases the Rio Oyapock constitutes the boundary between Brazil and French Guiana to its mouth. On the N.E. and E. Brazil is bounded by the Atlantic Ocean.

The coast, which is probably little short of 4000 m., presents various appearances. From Cape S. Maria in Uruguay, to the Morro de S. Marta (about 31° S. lat.), an extent of upwards of 300 m., the coast is low, sandy, and intersected by the outlets of numerous lakes, which skirt the shores in all this extent, in which it trends from S.W. to N.E. At the Morro de S. Marta, where it runs to the N., it begins to be rocky, but rises only to any considerable height to the N. of the island of S. Catherina. From the island of S. Francesco it trends to the N.E., and from the harbour of Santos to Cape Frio it runs nearly due E.; and thence to the bay of Espirito Santo N.E. In all this extent of nearly 1000 m. the coast is rocky, and in some parts rather high; it has a great number of indentations and excellent harbours, generally surrounded by flats of moderate extent. The most rocky and highest part is between Santos and Cape Frio.

From the bay of Espirito Santo to Bahia de Todos os Santos, the shores extend nearly S. and N.; this portion of about 600 m., is in general low and level, especially between the mouth of the Rio Doce and the small river Buranhen; to the N. of the latter it commonly rises from four to six yards in height, but is generally level; towards Cape S. Antonio it sinks lower. Along this coast, in about 18° S. lat., at a distance of from 25 to 30 m., extend the rocky banks of the Abrolhos; the coasting vessels commonly pass between them and the shores.

The coasts of the E. projection of Brazil from Cape S. Antonio nearly to the mouth of the river Parnaíba are of moderate height, rising perhaps nowhere above 30 ft., but they contain no harbours, except those formed by the mouths of the riv. This extent may be upwards of 800 m. The remainder of the shore, from the mouth of the Parnaíba to that of the Amazonas, is extremely low and marshy, a few sandy hills rising on it at great distances from one another. In all this extent of about 700 m. there are few harbours.

To the N. of the Rio Amazonas the coast is rather sandy and somewhat higher, though of inconsiderable elevation. Some parts are subject to a sudden rise of the sea at spring tides, which phenomenon is called *pororóca*. [Borr.] This coast extends about 400 miles.

The surface of Brazil is divided between upland and lowland. As the boundaries of the two regions have been ascertained only in a few places, it is not possible to establish the proportions of each; but at a rough calculation it may be assumed, that they occupy nearly equal portions, the upland extending over the E. and central part, and the lowlands principally along both sides of the Rio Amazonas, with a smaller portion on the shores, and on the S.W. border.

High mountains advance nearly to the shores between the bay of Santos and Cape Frio. This range, the higher

summits of which are hardly anywhere more than 20 m. from the coast, is called Serra do Mar (the sea range). The highest summits rise to about 3500 ft., and the passes over it to from 2000 to 2500 ft. This range continues to the S., but S. of the bay of Santos it recedes to about 60 or 80 m. from the coast. It is here occasionally called Serra Cubatão, and runs first S.W. and then S., to a point opposite the Morro de S. Marta, where at the sources of the Rio Uruguay it turns W., and advancing in that direction about 200 m., terminates on the banks of the Rio Uruguay to the N. of the junction of the Ibecuy-guaçu with it. From the S. side of this W. chain an elevated table-land extends S. between the riv. Uruguay and the shores, and continues in Uruguay Oriental, where it terminates near the vast mouth of the riv. La Plata, with the Punta Negra and Cape de S. Maria. This table-land, which in some places is called Serra dos Tappes, is of moderate height, but considerable width, approaching the banks of the Uruguay within a short distance, but remaining about 100 m. from the E. shores. A few low hills rise upon it. This table-land may be considered as the most S. and narrowest portion of the upland of Brazil.

Another and higher range of mountains runs nearly parallel to the Serra do Mar, at a distance of about 40 or 60 m. from the sea. It begins to the N.W. of the town of St. Paolo, where it is called Serra de Iaragua, and advancing thence to the N.E. it becomes higher, and is called Serra da Mantigueira. It afterwards turns N., and continues in that direction to the town of Villa Rica, where it may be considered to terminate with Mount Itacolumi, being divided from the range extending farther to the N. by a deep but narrow depression. At the source of the Rio Tiete, a tributary of the Parana, this range is united to the Serra do Mar by a tract of high ground. It contains the highest mountains of Brazil, which are situated where it begins to run due N. between the sources of the Rio Grande, the principal branch of the Parana, and the Rio Preto, a small tributary of the Parahyba. The Pico dos Orgaos rises to 7786 ft., the Morro de Papagaio to 7466 ft., and another summit which has not yet been distinguished by any name, to 8426 ft. The Itacolumi is 6080 ft. high. The passes across this chain rise to upwards of 3000 ft.

To the N. of Villa Rica the chain again rises and continues to the N., declining by degrees some points to the E. till it reaches the banks of the Rio de S. Francesco, which breaks through the chain, where it forms the cataract called Cachoeira (fall) de Santo Affonso. This chain, which had not obtained any peculiar name among the inhabitants, is now called Serra Espinhaço. It is of considerable height in its S. part, but does not attain that of the Serra Mantigueira; its highest summit, the Itambé, near Villa do Principe, rises only to the height of the Itacolumi. In proceeding N. it sinks considerably, and hardly any summit in the prov. of Bahia rises to 4000 ft., while the passes do not exceed 1800 ft. This chain remains generally 150 m. from the coast, but its offsets in some places approach it within 20 miles.

North of the great cataract of Affonso the mountains, called here Serra Ararapé or dos Cayriris, rise again to a considerable elevation, and form between 7° and 6° S. lat. a table-land of considerable extent, from which several ranges of high hills are detached to the E. and N., some of which terminate at no great distance from the shore between the Rio S. Francesco and the Rio Parnaíba. The most considerable of these lateral ranges are the Serra Borboréma, which separates the prov. of Rio Grande do Norte from that of Séará and the Serra Ibiapaba, which constitutes the boundary between Séará and Piauí. The elevation of no one point in this mountain-system, which covers the greater part of the E. projection of Brazil, has been determined by measurement, though some portion of it rises to a considerable height.

From its S.W. corner a mountain-range of moderate elevation runs S.W. along the Rio S. Francesco, and then W. to the sources of the Rio Parnaíba, where it turns N., and running in that direction at a distance of from 40 to 60 m. from the Rio Tocantins, terminates with a range of low hills at about 180 m. above the mouth of that riv. Between the Sertão of Pernambuco and the prov. of Piauí the passes rise to between 1200 and 1300 ft. above the sea.

To the W. of the range running N. and S., and to that of the Serras Espinhaço, da Mantigueira, and de Cubatão extends the upland of Brazil far into the interior of South

America, but it grows narrower as it runs W. Its N. boundary is indicated by the falls in the rivs. which carry their waters to the Rio Amazonas. These waterfalls occur in the Tocantins, at about $3^{\circ} 30'$ in the Xingù, at about $4^{\circ} 20'$ in the Tapajos south of 5° , and in the Madeira south of 8° S. lat.: a line drawn through these points separates the lowlands of the Rio Amazonas from the upland of Brazil. It is more difficult to determine the S. boundary-line of the upland; but it seems that it extends from the Morro de S. Marta in a W.N.W. direction to the Salto da Vittoria, the great waterfall of the riv. Iguassu, situated a few m. from the place where that riv. falls into the Paraná. It then follows the course of that riv. up to the cataract, called the Sete Quedas ($24^{\circ} 30'$ S. lat.), and hence it runs along the high ground which separates the affluents of the Parana and the upper branches of the Tocantins and Xingù from those of the Rio Paraguay, till it meets at the sources of the last-mentioned riv., the Serra dos Paricis, along which it runs at first to the W., and afterwards to the N.W., terminating at some distance from the confluence of the Mamoré with the Beni. By this boundary-line the lowlands of the Paraguay and Guaporé are divided from the high table-lands of the Parana and Upper Tapajos.

The extensive space enclosed within these boundaries is properly a table-land of considerable elevation, but an uneven surface. It does not rise to such a height as the table-land of Anahuac in Mexico, but it surpasses in elevation the highest table-lands of Europe, those of Bavaria, and Switzerland, and even that in the centre of the Spanish peninsula. The mountain-ranges which traverse it rise only to a comparatively small elevation above the plain.

The highest portion of the table-land seems to lie contiguous to the range of mountains which divides the upper branches of the Rio S. Francisco and of the affluents of the Rio Amazonas from those which fall into the Parana and Paraguay. This extensive range, which has lately been named Serra dos Vertentes (the watershed range), begins about 60 m. S. of Villa Rica, at the Serra da Mantigueira, between the sources of the Paraopeba, an upper branch of the Rio S. Francisco and the Rio Grande, an affluent of the Parana (about $20^{\circ} 30'$ S. lat.) It frequently changes its direction and makes numerous bends, but runs in general to the N.W. and terminates at some distance from the confluence of the Mamoré and Beni (about 11° S. lat.) In different districts it has different names. Between the sources of the Rio Francisco and the Rio Grande it is called Serra Cânestra and Serra Marcella, and at the sources of the Tocantins, Serra dos Pyreos. These, the highest portion of the Serra dos Vertentes, rise to 3500 ft. and upwards. The ranges farther to the W. are lower. The Serra Seida divides the upper branches of the Araguay, a tributary of the Tocantins, from those of the Pardo, a confluent of the Parana; and the Serra dos Paricis, the Tapajos from the Paraguay; and the N.W. branch of the latter the Tapajos from the Guaporé. The latter ranges probably never attain 3000 ft. At the place where the Serra Paricis turns to the N. it sends off a branch to the S.S.W., which, after a course of about 180 m., terminates in the plains of Chiquitos in Bolivia. This range, which is called Serra Agoapehy, divides the affluents of the Paraguay from the Ubahy, a tributary of the Guaporé, and, consequently, of the Madeira, and seems not to rise to the height of the Serra Paricis.

That portion of Brazil which, lying to the S. of the Serra dos Vertentes, borders on the W. on the Serra Agoapehy, and on the E. on the Serra Cubatão, is divided into two portions by a range of heights extending between 52° and 57° E. long. from the Serra Sciada southwards between the affluents of the Paraguay and Paraná. It enters the Paraguay and sends a branch eastwards, which terminates at the great waterfalls of the Paraná, called Sete Quedas. The country to the E. of this range is the high table-land of the Paraná, that to the W. the lowland of the Paraguay.

The lowland of the Paraguay, with the exception of the rather rapid descent of the enclosing mountains and a few hills or short ranges in the interior of the plain, presents nearly a level country, which declines imperceptibly towards the banks of the riv. Paraguay, where it terminates in swampy flats many miles wide. Near the rivs. it is covered with high trees, but the intervening spaces are grassy plains of considerable extent, here and there interrupted by barren tracts. This immense plain, which, though situated in the centre of America, hardly attains an elevation of 1000 ft., is

extremely hot and subject to long-continued droughts, which cause great mortality among men and cattle. The rains commonly begin at the end of October, and continue to April or May. They are accompanied by violent thunderstorms, and most abundant rains towards the end of the season, when they cause the rivs. to overflow the adjacent low grounds.

The principal riv., and that which is the receptacle of all the waters collected in this plain, the Paraguay, rises on the top of the Serra Paricis in the Sete Lagoas (seven lakes), which are at a short distance from one another, and communicate by narrow channels. Issuing from the east of these lakes the riv. flows through a swampy country in a N. direction for a short space, when it winds round by the W. and takes a S. course. It descends from the range with a rapid course, receiving from the E. and W. a great number of small streams, until it arrives in the plain, about 150 m. from its source: but its course still farther down is broken in some places by low falls, which however cease at its confluence with the Sipotuba, its first considerable tributary, which joins it on the right bank. From this point its waters are deep, and navigable for vessels of considerable size. Farther down it receives, on the right, the Jauru, which likewise rises in the Serra Paricis, and at about the middle of its course is joined by the Agoapehy, which originates in the Serra Agoapehy. Opposite the confluence of the Jauru is a range of elevated land, which ceases about 25 m. lower down, at a point called Escalvada ($16^{\circ} 40'$ N. lat.), where both margins of the riv. begin to be flat and low and interspersed with lakes. The low country extends to a great distance on both sides of the riv.; and of the lakes some are of considerable extent, especially three called Oberaba, Gahyba, and Mandiara, which lie on the right bank, and are from 10 to 15 m. in diameter. They are separated from the riv. by rocky cliffs, but united to it by narrow channels which divide the cliffs. In about $21^{\circ} 20'$ S. lat. a chain of small mountains on both sides come close on the Paraguay, by which its waters are contracted, and flow with great rapidity in two channels, separated by a rocky isl. of considerable length. This place, which is called Fecho dos Morros (the barricado of rocks), terminates the swampy and low margin of the riv. At the end of the rainy season, when the rains are very abundant, and the Paraguay cannot carry them off by its narrow channels at the Fecho dos Morros, the whole of the low ground is laid under water, and forms a lake, nearly 700 m. in length and from 70 to 150 m. in width, which covers a surface about as large as Lake Superior in Canada. In September however the waters are entirely carried off, and the whole surface is again laid dry. This temporary lake is called Xarayes, and indicated in some more ancient maps as a true lake. A considerable portion of the inundated land is covered with a kind of wild rice, on which innumerable flocks of waterfowl, especially of geese, feed; and the boatmen while passing shake off from the ears, which are always above the water, as much as they please.

During its course through this low plain the Paraguay is joined on the left by two considerable tributaries, the Rio de S. Lourenço and the Tacoary. The S. Lourenço, which rises to the E. of the upper branches of the Paraguay, is not inferior in length to the principal river, and runs in a S. W. direction upwards of 400 m., receiving about 100 m. from its mouth the Cujaba, which flows about 300 m. Both rivers are navigated to a considerable extent. The Tacoary, whose whole course may not exceed 300 m., rises with its numerous branches in the mountains E. of the plain; and though its navigation is rendered difficult by numerous waterfalls, it facilitates the communication of the interior provinces of Brazil. At the Fecho dos Morros the Paraguay leaves Brazil and enters the republic of Paraguay.

The table-land of the Paraná, which extends on the E. of the lowland of the Paraguay, is everywhere surrounded by mountain ranges. To the W. is the chain which divides the affluents of the Paraná from those of the Paraguay, to the N. the Serra dos Vertentes, to the E. the Serra da Mantigueira and the Serra Cubatão, and to the S. a range which (about 26° S. lat.) detaches itself from the Serra Cubatão and extends W. along the Iguassu to the Salto da Vittoria. Only in a comparatively short space between this Salto de Iguassu and the Sete Quedas of the Paraná the region is open towards the republic of Paraguay, from which it is separated by the Paraná.

The table-land of the Paraná is very uneven along its N.E. and N. border, where the offsets of the Serra da Mantigueira, Serra de Canastra, Serra de Marcella, and Serra dos Pyrneos extend many miles; but the remainder is a plain, presenting extensive levels, interrupted at great distances by hills of very gentle ascent and small elevation. The eastern and higher portion of the table-land is 2000 ft. and upwards above the level of the sea, but it is not known how much it declines on the banks of the Paraná, which runs through the least elevated portion of the table-land. Trees occur only on the declivities of the mountain ranges and in the lower tracts along the course of the rivers: the forests cover probably less than one-third of the surface. The plains are overgrown by a coarse but nourishing grass, here and there intersected by low bushes and a few small isolated trees. They serve as pasture for the innumerable herds of cattle, horses and mules, which constitute the riches of this portion of Brazil. Agriculture, though in a comparatively low state, is more attended to than in many other districts of Brazil, but it is principally limited to the culture of mandioca, maize, and different kinds of beans; rice is grown in some places and the sugar-cane on the lowlands along the rivers. Pine-apples, as well as the fruits of Europe and the vine, thrive very well. Among the fruit trees peculiar to this region is the jacuticaba (*Myrtus cauliflora*, Mart.), whose fruit gives a palatable wine. In the S. district wheat and flax are grown with success. The variation in the temperature is greater than in those parts which lie near the equator; but neither the heat nor the cold is ever excessive. In the winter (from May to October) hoar frost is only frequent near the mountains, and never occurs in the plains. The average heat is between 60° and 70°, and even in the summer it rarely rises above 80°. During the winter the winds blow from S.S.W. and S.E., but in summer they are irregular. The rain begins in the E. districts in October or November and lasts to April; it is most abundant in January, and then always accompanied by fog during the morning. Farther to the W. on the plains it begins later. First it rains only during night, afterwards in the afternoon, and then alternately in the night and in the day; sometimes for days and even weeks without cessation.

These abundant rains feed a number of large rivers, which traverse the table-land from E. to W., having most of them their sources in the ranges, which divide it from the shores: they all unite their waters with those of the Paraná. The farthest branches of that large river rise in the mountainous country, where the Serra da Mantigueira unites with the Serra da Canastra. The most distant branch is the Rio Grande, which, rising where the Serra da Mantigueira turns to the N., at first flows N. and then N.W. for a considerable space; afterwards it turns to the W. and continues some hundred miles in that direction, declining somewhat to the S. towards its junction with the Paranahyba. In this course it receives on the left bank three considerable tributaries, the Sapucahy, the Pardo, and the Mogi, each of which descends through the plains from the S., and runs upwards of 200 m. At the confluence with the Paranahyba the Rio Grande has already had a course of upwards of 500 m., and then its name is changed into that of Paraná. The Paranahyba rises in the Serra dos Pyrneos, receives in its course the Corumbá, and joins the Rio Grande after a course of upwards of 350 m. Many miles below this confluence the Paraná forms a considerable cataract, called Urubù Punga, and lower down it receives the Tietê, which traverses nearly the middle of the plains. The last-mentioned river rises at no great distance from the shores of the Atlantic in the western declivity of the Serra de Cubatão, and runs upwards of 400 m. Though its navigation is rendered very difficult by numerous rapids and waterfalls, this river has till now been more navigated than any other in the interior of Brazil. Between the Punga Urubù and the Sete Quedas the Paraná receives besides the Tietê two other large tributaries, the Pardo on the right, and the Parannapamena on the left, both running about 300 m. The Pardo, which rises in the Serra Sejada, was formerly much navigated in spite of its numerous rapids and falls. In this tract the Paraná forms many large islands, of which the largest are the Ilha Comprida (Long Island), upwards of 20 m. in length, and the Ilha Grande, which is not much less than 70 m. in length and of considerable width. The Ilha Grande terminates 4 m. above the Sete Quedas (or Seven Falls). Below the S. extremity of the Ilha Grande

the Paraná is nearly 4 m. wide, but at the falls the bed of the river is contracted to about 50 fathoms. The immense volume of the river is then divided into seven channels, formed by six small islands of rock, and precipitated down the ledges with a current of indescribable fury and awful noise. This cataract impedes all communication by water between the table-land and the countries below it. To the S. of the Sete Quedas, the Paraná continuing to the S. still receives a large tributary, the Iguassu or Iguaçá, which rises about 70 m. from the coast, and traversing a mountainous country forms at a short distance from its mouth the great cataract called Salto da Vitoria, and joins the Paraná after a course of nearly 300 m. After this junction the river still runs S., then turns to the W., and falls into the Paraguay after a course of above 1000 m.

To the S. of the table-land of the Paraná extends a smaller one of a similar description on both sides of the Upper Uruguay, which is called Campos da Vacaria (cattle-field), being destitute of trees and covered with fine grass, which renders it favourable to the rearing of cattle. Its elevation above the sea, from which it is divided by a chain of mountains, is not known, but it appears to be considerable. The riv. Uruguay, which rises in the mountains near the coast, traverses it in all its extent, flowing W.N.W. and W. till it enters the plain of the Missiones.

The S. extremity of Brazil, which extends S.W. of the Campos da Vacaria, contains two plains, one lying on the N.W. along the riv. Uruguay and the other on the S.E. along the sea-shore. They are divided by a high ground of great breadth but of inconsiderable elevation, which is called Serra dos Tappes. The surface of the high ground extends in spacious and nearly level plains, here and there interrupted by small hills. This upper part is entirely without trees, and covered only by coarse grass and bushes; but on the declivities and in the valleys formed by the offsets of the high ground, many fine trees occur. The valleys are also the only places in which there is any agriculture, and this is nearly confined to the raising of wheat and maize.

To the N.W. of this high ground extends along the banks of the Uruguay the plain of the Missiones, which received its name from the seven missions established here by the Jesuits. This plain is very little known, but seems to be well adapted to the cultivation of different kinds of grain, as well as of cotton and of *matte* or tea of Paraguay. The riv. Uruguay, which forms its north-western boundary, and divides it from the Missiones de La Plata, is here navigable in all its extent, though it has some rapids.

The plain along the sea-shores extends from S.W. to N.E. upwards of 200 m., with an average breadth of between 50 and 60 m. It is nearly a level, rising but little and imperceptibly towards the high ground on the west. Its soil towards the coast is sandy, with a substratum of clay, and produces grass, but no trees. Farther inland the soil is better, but the country still without trees. The most remarkable of the numerous lakes on this coast is the Lagoa dos Patos, one of the largest in South America, which took its name from a tribe of Indians. It extends 150 m. in length from S.W. to N.E., and 35 at its greatest width, so that it there occupies about half of the plain. It has sufficient depth for vessels of a middling size, but some very dangerous shoals. The water is salt in the southern part. It is the recipient of almost all the currents that traverse the plain, and receives, about 12 m. from its northern extremity, the Iacuby, a winding riv., which rises on the southern extremity of the Campos da Vacaria, and drains a country adapted to agriculture. About 15 m. from its embouchure, the Iacuby forms a spacious bay on its eastern margin, on which the town of Portalegre is situated. At the S. extremity the lake of Patos receives the Rio de St. Gonçalo, which is properly only the outlet of the lake Mirim. This riv. is about 50 m. long, wide, and navigable. The S. part of the lakes Mirim and Mangueira belongs to Uruguay. [BANDA ORIENTAL.]

The lake Dos Patos discharges its waters into the sea by the Rio Grande de St. Pedro, which flows about 10 m. almost N. and S., and is nearly 3 m. in width. The mouth of this riv. is full of shoals, which are the more dangerous as they are subject to be frequently changed by the tides.

This part of Brazil, extending between 28° and 33°, enjoys a temperate climate like that of Spain or Italy; the air is pure and healthy. In the valleys and on the plain, frost very rarely occurs: on the high ground it is annually felt for one or two months: but as very little snow falls, the

cattle find pasture all the year round. From May to Oct. the rains are abundant.

The low country between the shores of the Atlantic and the first mountain range, from the Morro de St. Marta on the S. to Cape St. Antonio, near Bahia, on the N., extends in some places 100 and even 120 m. inland, as between the Rio Doce and the Bahia de Todos os Santos. In other places the mountains approach the sea within 15 or 20 m., as between the bay of Santos and Cape Frio. North of the Rio Doce, a level country extends upwards of 80 m. inland, but to the W. of Cape Frio the hills approach so near the sea, that their lower extremity is washed by the high tides, and the traveller can only pass at low water.

Except the comparatively small tracts which have been cultivated by European settlers and their descendants, the sides of the mountains and the hills and plains are covered by interminable forests, extending even in the valleys along the banks of the rivers nearly to their sources on the high land. North of Cape Frio, the trees and plants peculiar to a tropical climate are common, but south of it they occur less frequently. The soil is in most places of great fertility, and produces sugar, coffee, cotton, and cacao, mandioca, maize, and rice in abundance.

The riv. in this tract are very numerous, but have a short course, seldom exceeding 100 m. They are generally navigable to 30, 50, or even 60 m. inland. The banks of nearly all of them are skirted by low ground, which are inundated after the rains have begun. The riv. begin to rise in Nov., and the inundation ceases in the middle or towards the end of Jan.: in some it lasts two months, in others only a fortnight. As the mouths of these riv. are commonly formed by a soft soil, they are subject to many changes, which are produced by the variable winds and by the current prevailing on this coast. The largest of these riv. are the Parahyba, the Doce and the Rio Belmonte.

The waters brought down by the Doce preserve their freshness for a considerable distance into the ocean, and hence it has received the name of Doce, soft or fresh.

The Rio Belmonte, in traversing a mountainous range called Serra dos Aimores, is contracted by two high steep rocks, and descends on a sudden from a height of more than 120 ft. with tremendous noise into a whirlpool. Fifteen m. lower down, it has a little fall, after which it flows through a flat and wooded country to the sea, describing various windings, with a current rapid and wide but of little depth. It contains many flat islands, and receives no considerable stream after it descends the fall. About 20 m. from the sea, the Rio Belmonte is united to the Rio Patype, its nearest neighbour to the N. by a natural channel called Salsa.

This country, though mostly within the tropics, enjoys a moderate climate. In Porto Seguro the medium heat, according to Freyriess, is only 70½ Fahrenheit, but at Rio Janeiro 74°, which he attributes to the neighbourhood of the rocky mountains. At the latter place, however, the thermometer occasionally rises to 100° and 110°, even to 120°. In summer (Dec., Jan., and Feb.), the average heat at noon is 86°, and in the morning 72°; and in the winter (June, July, and August), it is 72° at noon, and in the morning 59°. Another peculiarity is the great humidity, which arises probably partly from the country being almost entirely covered with high trees and exuberant vegetation, and partly from the regular change of the land and sea winds. The sea winds commonly begin at noon, rarely sooner, more frequently at two o'clock, and blow till night-fall. In the other parts of the day the winds from the W. prevail. The effect of this great humidity of the atmosphere is that the coast of Brazil has not such a regular succession of dry and rainy seasons as other tropical countries. No part of the year is entirely exempt from rain, though the winter is often dry and the sky cloudless; and the rains in the summer are generally very abundant, especially in January. In summer, thunder is very frequent, and always accompanied with violent storms, which, however, never cause damage to be compared with that of the hurricanes in the West Indies. Hail-stones never fall.

The Serra Espinhaço, which bounds on the W. the countries on the shore, divides them from the highest part of the table-land of Brazil. This extensive country, which extends W. to the N. branch of the Serra Paricis, is, as far as we know, an uneven plain, on which numerous hills, sometimes isolated, sometimes in groups, and sometimes in ranges, rise to a moderate height, commonly with a gentle ascent.

Along the watercourses are depressions or valleys, but generally of small extent. The plain is at an elevation of from 2000 to 2500 ft., and the hills rise above it only a few hundred, and perhaps never more than 1000 ft. The valleys descend towards the S., where they approach the Serra dos Vertentes, a few hundred feet below the level of the plain, but farther to the N. still more. The surface of the plain, as well as of the hills, is in some places covered with sand, and in others with bare sandstone rocks, but it is generally clothed with a coarse grass, bushes, and single standing trees. In summer these trees and bushes shed their leaves, and as the grass in most places is withered at the same time, the country has a dismal aspect. But the valleys along the watercourse have a much more fertile soil, and here the high trees and thick foliage which cover the maritime districts occur again. These valleys are adapted to culture and for raising nearly all the products of the coast. The plains yield only pasture for cattle.

This plain is drained by four rivers of considerable extent, the S. Francisco, the Tocantins, the Xingó, and the Tapajos. The upper branches of the S. Francisco rise on the N. declivity of the Serra dos Vertentes about 3000 ft. above the sea, and between 21° and 20° S. lat. They are principally two; the Parapoeba, and that more properly called the S. Francisco, which unite after a course of above 150 m. in about 19° 20' S. lat., where their level is 1897 ft. above the sea. The riv. then flows in a nearly due N. direction to its junction with the Rio das Velhas (S. of 17° S. lat.); but before reaching this point, it forms the cataracts of Pirapora. At the junction with the Rio das Velhas it is 1708 ft. above the sea. The Rio das Velhas rises in the neighbourhood of Villa Rica, on the N. declivities of the Serra Mantigueira, and runs upwards of 250 m. From this point the Francisco continues to flow N. with a slight declination to the E., and its current is much less rapid. At Ioazeiro, 7° of lat. from its junction with the Rio das Velhas, it is still 1000 ft. above the sea, so that in a space measuring in a straight line nearly 500 m., it has only a fall of about 700 ft. It has been numerous windings, and is navigable down to Vargem Redonda, where the navigation is interrupted by several falls. In all this course it is not joined by any considerable tributary, and on its banks there extend for about 250 m. salt steppes, in which the mineral appears in the form of an efflorescence, and is collected by the people. Vargem Redonda is about 300 m. below Ioazeiro, following the course of the riv. Not far from this place the riv. is narrowed by high rocky cliffs on both sides, runs with great rapidity, and forms several falls, of which the Cachoeira de Affonso, the most considerable, is said to be 50 ft. perpendicular height. The cataracts and rapids occupy a space of nearly 70 m. and terminate at the Aldea do Caninde, whence a road leads to Vargem Redonda for the transport of merchandise into the interior of Brazil. From the Aldea do Caninde to its mouth, the riv. runs still about 200 m., and its navigation is not interrupted, but the current is rapid. Though a deep riv. in the interior of the continent, the Rio de S. Francisco enters the sea by two comparatively shallow mouths of unequal size, of which the N. and the larger is nearly 2 m. wide, but with so little depth that only vessels of 60 tons' burden can enter it at low water, and must wait for the full tides to go out. The riv. ascends it about 50 m., and it rises at Villa de Pineda, where the riv. is about 1 m. wide, 3 ft. at full and change. The inundations are considerable, especially above the town. The riv. begins to rise in Nov., and continues rising till Feb. Being skirted in most places by low and level tracts, its waters cover the country along its banks to the distance of 15 or 20 m., and in some places it penetrates still farther by means of some channels, by which the adjacent hills are divided from one another. The current during this period is so rapid in the middle of the riv., that the barges make nearly 100 m. in 24 hours down the stream. These inundations fertilize the country, and are particularly favourable to the cultivation of the sugar-cane. The soil on its banks is increasing rapidly. The whole course of the Rio de S. Francisco may be above 1300 m., and may be compared with the Volga.

The Rio Tocantins is divided from the Rio de S. Francisco, not by a chain of high mountains, but by a table-land, which towards the upper branches of the riv., and towards its confluence with the Araguay, is overtopped by groups of hills of considerable height. The upper branches

of the Tocantins rise in the Montes dos Pyreneos and in the Serra Dourada, both portions of the Serra dos Vertentes. In the Serra Dourada rises the Urubù, which is considered as the true source of the riv., and after a course of 70 m., joins the Rio Almas, which is not inferior to it, and descends from the Montes dos Pyreneos. The riv. preserves the name of Rio Almas to its confluence with the Maranhão, which joins it 90 m. farther down. The Maranhão rises in lake Formosa, which is 15 m. in length, and two in width, and flows to the W. and then to the N. Hence the united riv. is called Maranhão, to its junction with the Paranatinga, about 140 m. lower down ($12^{\circ} 20'$). The Paranatinga is formed by the junction of two considerable riv., the Paranam and the Palma, the former of which flows nearly 300 m. Hence the riv. is called Tocantins, and becomes navigable at the Porto Real de Pontal, where it is 374 fathoms wide. The number of its affluents lower down is great, but none of them is very considerable, except the Rio Araguay, which joins it at about 5° S. lat. Before the Tocantins arrives at this point, its navigation is interrupted by some cataracts, between 7° and 6° , among which the most considerable are the Cachoeira de S. Bartolomeo or das tres Barras, and the Cachoeira de S. Antonio. After its junction with the Rio Araguay the Tocantins flows between rocks and cliffs, forming many rapids and small cataracts, and this part of its course is called the channel of Taniri. Issuing from this channel, it has near Itaboca ($3^{\circ} 30'$) more considerable cataracts, which rise above one another like terraces, and then the riv. enters the low country skirting the Amazonas. Its whole course is in a N. direction: at about $1^{\circ} 30'$ S. lat. it unites with the S. branch of the Rio das Amazonas, and takes the name of Rio da Pará. At the point of junction is an island, about 15 m. long, and low and flat, called Uararaby, which divides the mouth of the Tocantins into two arms; of which the E. is called Bahia de Marapatá, and the W. Bahia de Limosiro: the width of the riv. is here upwards of 15 m. The Rio da Pará, which divides the isl. of Marajo or Ioanes from the continent, widens in its progress to the N. still more, and may be above 60 m. where it falls into the sea (about $0^{\circ} 30'$ S. lat.). The whole course of the Tocantins is at least 1500 miles.

The Araguay, the largest tributary of the Tocantins, rises on the N. declivity of the Serra Sejada, about 18° S. lat., where it is called Bonito, which name is changed into that of Rio Grande, after it has united with the Rio Barreiros and Rio Cajapo. Its waters are lower down increased by those of the Rio Claro, Rio Vermelho, Rio Tizoiras, and Rio Crixa. All these riv. flowing from the S.E. join the Araguay on the right, and none of the three last runs less than 200 m. By means of the Vermelho, merchandize has been carried from Villa Boa, the capital of Goyaz to Pará. About 30 m. from the mouth of the Crixa, the river divides itself in $12^{\circ} 30'$ into two branches nearly equal, which reunite in $9^{\circ} 36'$, enclosing the isl. of S. Anna, perhaps the largest river island in the world. It is more than 200 m. in length, and of considerable width. The W. arm preserves the name of Araguay, and the E. takes that of Furo; barges generally go through the latter; but both contain small falls and rapids. The branch called Araguay receives, about 40 m. N. of the S. point of the island of S. Anna, the Rio dos Mortes, which runs nearly 300 m. At about 5° the Araguay joins the Tocantins after a course of above 1000 miles.

The Rio Araguay may be considered as the boundary of our knowledge of the interior of Brazil, the countries drained by the Xingú, and Tapajos being almost unknown. Though the rivers have been ascended the greatest part of their course, no European families have settled in this country, and it has not been traversed by land.

The Rio Xingú probably rises in the Serra dos Vertentes, about 15° S. lat., but its sources as well as its upper course have not been visited. It does not appear that any of its tributaries are considerable. Between 5° and 4° S. lat. its bed is narrowed and traversed by a chain of rocks, and thus the cataracts are produced which occur in this part of the river. These rocks make the riv. form a large bend to the S. and E., though in general the direction of its course is to the N., with numerous windings. The remainder of its course lies through the low plain on the banks of the Rio Amazonas, which it joins at Porto de Moz, where it is about 4 m. wide.

The Rio Tapajos has lately risen to greater importance,

since it has been ascertained that it may be navigated with less danger and difficulty than the Rio Madeira. Since 1812, it has been the road of communication between Pará and the European settlements on the banks of the Guaporé, the Paraguay and the St. Lourenço. The Rio Tapajos is formed by the confluence of two considerable riv., the Iruena and the Rio dos Arinos. The Iruena rises near the point where the Serra dos Paricis divides into two branches, one of which runs N., and the other, the Serra Agoapehy, S., near 14° S. lat. It runs for upwards of 200 m. due N., and then inclines to the E. to meet the Rio dos Arinos. The number of its affluents is very great, and at the confluence the Iruena is the larger riv., but it has not yet been navigated. The Rio dos Arinos rises farther to the E., near the sources of the Paraguay, and runs first N.E. and then N. to the junction with the Rio Preto, which is the only branch of the riv. which is at present navigated. After this junction the Rio dos Arinos flows N.W., nearly to its confluence with the Iruena, about 90° S. lat. Hence the united riv. is called Tapajos, and flows N.E. forming two cataracts, the Cachoeiras de S. João da Barra and de S. Carlos. At the latter the course of the riv. is changed, and flows hence to the N.N.E. The largest of its cataracts, called Salto Grande, occurs at about $7^{\circ} 30'$, and is said to be 30 ft. perpendicular height. Between 5° and 6° is another fall, called Cachoeira de Maranhão, which likewise interrupts the navigation. The remainder of its course is through the low country along the Rio Amazonas. This riv. is joined by numerous tributaries, especially from the right. It falls into the Amazonas near Santarem, where it is about 4 m. wide.

On the banks of the Iruena, and W. to the N. branch of the Serra Paricis, extends a sandy desert, called Campos dos Paricis. The surface is formed by long-backed ridges of sandy hills, parallel to one another, and divided by longitudinal valleys. The soil consists of sand, so loose that beasts of burden can hardly proceed; and it is nearly destitute of vegetation, except where springs issue from the ground. The extent of this desert, which may be considered as occupying the centre of South America, has not yet been ascertained.

The climate of the Campos Paricis has not yet been described. That of the table-land which extends to the E. of it differs in many respects from the climate of the coast. The rain begins in October, with heavy thunder-storms, and lasts till April, but it is less in quantity where the country extends in nearly level plains. The medium heat is stated by Freyreiss to be only $65\frac{1}{2}^{\circ}$ Fahrenheit, but it often rises to 100° at noon. The difference between the temperature of the day and night frequently amounts to 30° . In the winter the air is serene, and there is no rain; but sometimes in the month of June or July slight frost occurs, especially towards the Serra dos Vertentes, in the S. districts, which destroy the crops of the bananas, sugar, coffee, and even cotton. Thunder-storms prevail only in the rainy season, and are sometimes accompanied by hailstones. The winds are irregular at all seasons, and frequently bring dense fogs.

The table-land of Brazil is separated from the Andes of Bolivia by a large and extensive plain, traversed by those streams which by their junction form the Rio Madeira. This plain may perhaps rise to the height of 1200 or 1500 ft.; the latter being the height which, according to the estimate of Martius, the country attains which forms the watershed between the Pilcomayo and Ubahy. A small portion only of this plain belongs to Brazil—the country extending along the W. declivity of the N. branch of the Serra Paricis on both banks of the Rio Guaporé. A few scattered hills rise on the plain to a moderate elevation, and are divided from one another by extensive level tracts, mostly covered with high forest-trees, and here and there intersected by a few barren districts without trees and with little vegetation.

The Rio Guaporé, called also Itenez, rises ($14^{\circ} 30'$ S. lat.) in the Serra dos Paricis, about 100 m. N.E. of Villa Bella, the capital of Matto Grosso, and at first runs S. parallel to the Rio Jaurá, a tributary of the Paraguay. It then turns W., and receives the waters of the Rio Alegre, a small but navigable tributary. In 1773 an unsuccessful attempt was made to unite this river by a canal with the Rio Agoapehy, which falls into the Jaurá. At the junction with this river the Guaporé turns to the N.N.W., and then to the W., where it is joined on the right by the large Rio Paraguay, and the still larger Ubahy. At the confluence with the latter it turns N., and

uniting itself to the Mamorè, loses its name. The Guaporè runs more than 400 m., and having only a few rapids and no cataracts, is a navigable river.

The Rio Madeira is formed by the junction of the Rio Beni with the Mamorè (in $10^{\circ} 22' S.$ lat.), which takes place about 100 m. below the confluence of the latter with the Guaporè (in $11^{\circ} 55' S.$ lat.). This river runs in a N.E. direction, with numerous windings, and falls into the Amazonas in $3^{\circ} 24' S.$ lat., about 70 m. below Villa de Borba, after a course of upwards of 600 miles. As the river, after the junction of the Mamorè and Beni, is 900 fathoms wide, and in its course in general preserves this width, with a considerable depth, it would become a channel of internal navigation were its course not interrupted by numerous cataracts. Below the union of the two principal rivers thirteen cataracts occur; and above it, in the Mamorè, five. They begin in $10^{\circ} 37'$ with the Cachoeira da Bananeira, and terminate at $8^{\circ} 48'$, with the Cachoeira de S. Antonio. The highest of these cataracts is in $8^{\circ} 52' S.$ lat., where the river descends 30 feet. It is however supposed that all the falls taken together amount only to 150 ft. of height. The Madeira was frequently navigated up to 1787, but at present other lines of communication are preferred.

The N. part of Brazil comprehends the greater portion of the plain of the Rio das Amazonas, one of the most extensive on the globe. It lies along both sides of that majestic river, from its wide mouth, near $50^{\circ} W.$ long., to the embouchure of the Ucayale, near $72^{\circ} W.$ long., and consequently extends in this direction about 1500 miles. The width of this plain varies, being much narrower towards the mouth of the riv. than farther W. Between the cataracts of the Xingù ($4^{\circ} 20' S.$ lat.) and the Serras de Tumucuracque and de Acaray, which chain divides the sources of the Essequibo and Mazarony from the riv. falling into the Amazonas, the plain hardly extends S. and N. more than 5° of lat., or about 350 miles. Under the meridian of 64° it begins S. at the cataracts of the Rio Madeira ($8^{\circ} 48'$), and extends N. to the S. branches of the Serra Parime (about $3^{\circ} N.$ lat.) about 800 miles. It is probable that its width enlarges considerably still farther to the W., but here the boundary-line of the plain on the N. as well as on the S. lies in countries not yet explored. This plain is divided by the Rio Amazonas into two parts, declining insensibly towards the bed of the riv., but not everywhere in the same direction. On the E., as far as the mouth of the Madeira, its surface declines N. and S., but to the W. of the Madeira the declivity is directed S.E. and N.E. Hence the rivs. joining the Rio Amazonas towards its mouth, form nearly right angles with its course, but the Madeira and the rivs. which unite with it farther to the W. form acute angles, and some of them, as the Rio Negro and the Yupurà, flow a considerable part of their course nearly parallel to it. But this declivity is so imperceptible that the eye cannot discover it, and some of the rivs. seem to have no current at all in the dry season, as is observed of the lower course of the Rio Madeira. Elevations deserving the name of hills are rare, but the surface does not present one unvarying level like the plains on the Orinoco: it consists rather of a continual succession of extremely slight undulations, and to this peculiarity of its surface, joined to its tropical climate, it seems principally to owe the inconceivable luxuriance of its vegetation.

The softness of the soil, which consists, as far as it is known, nearly everywhere of earthy matter, possessing only a small degree of cohesion, yields readily to the impetuous rush of the waters in the rainy season, and thus are formed the almost countless larger and smaller islands which continually divide the riv. into numerous channels. In other countries travellers generally think it necessary to observe the islands formed by rivs., but in this plain, on the contrary, it appears an extraordinary occurrence if at any place the whole volume of the riv. runs in one channel. These islands occupy a considerable portion of the plain: they are inundated in the wet season, but when the riv. is low, they rise 20 and 30 ft. above the surface. They have a sandy low beach, but the inland parts are higher and wooded.

The tracts which skirt the banks of the riv. are generally low, and overflowed when the riv. rises. In many places the inundations are extended much farther inland by the channels which, in the dry season, bring down the water from the numerous lakes. But during the inundation these channels carry the water from the rivs. to the lakes, and

the low country in their vicinity is covered with water. All the tracts thus inundated are overgrown by an uninterrupted forest of trees of different size and species, with various bushes and underwood between them, and all these plants are tied together by numerous creepers, so that they form a vegetable wall, through which it is impossible to penetrate. The water-courses are the only roads which lead through this wilderness. That portion of the plain which is not subject to inundations is likewise covered with interminable forests, but the trees are of more equal size, and without underwood, though here also the creepers are numerous. Occasionally some tracts of moderate extent occur, which are without trees, and covered with rich grass, intermingled with a few low bushes.

Nothing however characterizes this plain more strikingly than the incredible abundance of water. Brooks and ponds are of rare occurrence, for they enlarge immediately into rivs. and lakes; and these rivs. and lakes form along the banks of the larger rivs. (the only part of the country which has yet been visited) an interminable watery maze. Martius is at a loss how to explain this matter. He thinks that the inundation cannot account for it, and supposes that the soil of this plain contains an extraordinary number of sources and springs, and that the water issuing from them is continually increased by the moisture of the air, which is more especially abundant in tropical countries whenever they are covered with trees. This abundance of water, the softness of the soil, and the comparatively small inequalities of the surface, have made some phenomena common here which are rare in other countries. Such are the natural canals by which two rivs. are united. Between the Madeira and the Rio Purus, its next W. neighbour, two such natural water communications exist, at least 120 m. distant from one another. Others occur between other rivs. These natural canals unite also different riv. systems, as the Cassiquiare between the Orinoco and Rio Negro, and the canal of Cabuquera farther W., which, according to the information of the natives, unites the Uaupè, or Uaupes, the principal branch of the Rio Negro, to the Guaviare, a tributary of the Orinoco. To the same peculiarities it is mainly to be attributed, that many of the rivs., especially those running from the N. of the Amazonas, send detached branches to the principal river, 100 m. and upwards before they entirely unite with it.

As to the rivs. which drain this plain, we have already noticed the Tocantins, Xingù, Tapajos, and Madeira. To the W. of the last, and nearly parallel to it, flow some considerable rivs.—the Purus the Coary, the Toffé, the Iurua, the Iutahy, and the Hyabary or Yavary. These rivs., which run from 600 to 800 m., have not been explored, and the country through which they flow is nearly unknown; but according to the information of the Indians it does not seem that they are interrupted by cataracts. The rivs. which drain the plain on the N. of the Rio das Amazonas belong partly to the republic of Ecuador, as the Pastaza, the Tigre, the Napo, and Putumayo or Iça, only the lower course of the last-named riv. being included in Brazil; and partly to Brazil, as the Yupurà or Yaparà and the Rio Negro. The remotest branches of the Yupurà originate in the S. districts of the republic of New Granada, in the mountain-knot of Popayan, whence they descend into the plain. The greatest part of its course is within the boundary of the rep. of Ecuador, in which it forms, in $73^{\circ} 40' W.$ long., a cataract called Cachoeira de Arara Coara, about 60 ft. high. It is not yet determined if the country between this fall and that of Cupati, which occurs near 3° farther E., belongs to Brazil or to the rep. of Ecuador. In this tract the Yupurà receives its largest tributary, the Apurarie. The fall of Cupati is at low water only a rapid. From this fall downwards the Yupurà flows nearly parallel to the Rio Amazonas, is divided from it by a low, wooded country, of which the greatest part is annually inundated for some months. About 100 m. from the mouth of the Yupurà begins the canal of Avariparanà, which lies from N.E. to S.W., and joins the Rio Amazonas nearly 200 m. above the mouth of the Yupurà. In this canal the water flows from December to June N.E. from the Rio Amazonas to the Yupurà, and from June to August S.W. from the Yupurà to the Rio Amazonas. The large isl. formed by this canal and the riv. is traversed by other cans., which are subject to a similar change of current. The Rio Negro originates in a swampy country about $2^{\circ} 30' N.$ lat. and $70^{\circ} 30' W.$ long. and runs first N.E. and afterwards S.E. about 200 m., and

it is joined by the *San de Casapary*, which runs with a rather rapid course from the Orinoco. Hence it runs with numerous whirls nearly due S. till it is joined from the W. by the Rio Uaupé or Uaupés, which should be considered as the principal branch. This riv., whose course we very imperfectly know, seems not to originate in the principal tract of the Andes, but in a group of hills at a considerable distance E. of them. It flows first by a great distance S.E., and thence turns E., not far from the place where the Uaupé begins to turn to the E., it forms a considerable reservoir, the *Chaboga de Ipatoo*. The Uaupé may have run 200 m. when it joins the Rio Negro near the equator, between 57° and 68° W. long. From this junction the Rio Negro flows E. with a slight declination to the S., which increases as it proceeds till its course is S.E. In this part of its course the Rio Negro has rather the appearance of a succession of lakes united by comparatively narrow channels than that of a riv. It sometimes enlarges to 12, 15, or even 20 m. in width, and sometimes narrows to 1 or 1½ m.; its current is generally very slow and not disturbed by rapids. Above 200 m. from its mouth it is joined by the Rio Branco, whose principal branch, called *Caracasara*, originates in the *Serra Parana*, at an equal distance from some of the branches of the Orinoco, and flows E. till it joins another considerable branch, the *Tacari*, which rises near the sources of the *Atapury*, a tributary of the *Essequibo*, and flows a considerable distance N. parallel to the *Orinoco*. The *Tacari* afterwards turns N. by a bold bend and joins the *Caracasara*. Both branches have probably a course of more than 200 m. before their junction. The widest riv., called the *Itaneta*, runs about 100 m. to a N. direction, and has only a few rapid returns, however, occur to the *Tacari*. The upper reaches of the Rio Branco is without the boundary line of the plain of the Rio das Amazonas. About 50 m. below the mouth of the Rio Branco, a riv. branches off from the Rio Negro called *Carapintim*, which lies in a S.W. and N. direction, and passing through the *Lake of Chabaya*, sends its waters to the Rio Amazonas by the *canal*, *Chabaya*, about 100 m. above the principal mouth of the Rio Negro. The whole course of this riv. may be 1200 m., and if the *Itaneta* is taken for its principal branch, probably 1500 m. more.

No large rivs. traverse the N. plain E. of the Rio Negro. The *Orinoco* or *Rio das Tombatas* and *Gurupatuba* are the most considerable. The great plain of the Rio das Amazonas, which even on its extreme borders hardly anywhere exceeds the elevation of 500 or 700 ft. above the sea, and extends on both sides of the equator, differs essentially considerably from other tropical countries. The day and rainy seasons are here not so distinctly marked as in Asia or Africa; nearly every day exhibits both. In the night no cloud covers the dark blue sky, and this serenity continues to the morning hours. But between 8 and 10 o'clock clouds begin to appear on the horizon, and rapidly extend towards the higher parts of the sky until after noon, when the hurricane begins to roar, thunder and lightning follow in uninterrupted succession, and the rain pours down in torrents. The heat is oppressive; but in a couple of hours the equilibrium of the air is re-established, and by degrees the clouds disappear and the sky resumes its former serenity. The rains however are less regular and abundant from August to October. They increase during the month of November and are accompanied with more violent thunder-storms; the rains generally continue in equal abundance to the end of March. Especially however they are interrupted by a drier season in January and February, which is called *Veranico* (dew-season), and then they continue most abundant to April and May. The E. wind is by far the most prevalent. The leaves are never without leaves; for while they are shedding the old ones, new ones are already forming. Most of the trees and plants, especially those which are peculiar to a tropical climate, blossom between November and March, and cease from between June and September.

All the rivs. covering the plain inundate the adjacent low tracts of marshy land; but the inundation does not take place in all of them at the same season. Some of the tributaries of the Rio das Amazonas originate near the tropic, and others at no great distance from it; but the southern trunks in extensive country N. of the equator. The periodical rains are different in these countries, and the seasons are not all at different seasons. The riv. descending

from the table-land, the *Xingó* and *Tapajós*, begin to rise in Nov., attain their greatest height in Jan., and fall their lowest level from Aug. to Oct. The *Madeira*, whose changes coincide with those of the principal rivs., and which therefore has in this respect the greatest claim to be considered its principal branch, begins to rise in Dec. and attains its greatest height in April and May; its waters are lowest in Oct. The N. rivs. begin to rise in Feb. or March, and are fullest from July to Sept., when the water in the Rio Amazonas has nearly attained its lowest line. This explains why the canal of *Atapury*, between the *Xingó* and *Amazonas*, flows from June to Aug. N.W. into the latter, and from Dec. to June into the *Xingó*. The height which the water attains above the lowest level varies in different rivs. in the *Xingó* and *Tapajós* it is 35 ft.; in the *Madeira*, as far up as *Ouracourts*, 25 ft.; in the Rio Negro, 30 ft.; in the Rio Branco, 25 ft.; and in the Rio das Amazonas, in the plain, 10 ft. and upwards.

On the N. of the *Kurúba* *Amazonas*, the plain extends to *Manapá*, opposite the island of *Galanga*, which lies in the principal embouchure of the riv.; on the E. it includes the lower course of the Rio *Tacari*, and extends to *Chapuyas* of hills which rise at a distance of about 50 m. from its banks on the E. parallel to its course. To the E. of these hills lies another plain, which also, though less extensive, measures from N. to N. upwards of 200 m., and from W. to E. more than 100 m. The largest of its numerous rivs. is the *Parahyba*. This plain which may be called the plain of *Parahyba*, differs nearly in every respect from that of the *Amazonas*. Its surface is much more uneven, rising frequently to hills of some hundred feet elevation, which spread not into spacious table lands. The S. portion of the plain, which is more level, is covered with low soft grass, interspersed here and there with bushes and a few high trees. This district is well adapted for the rearing of cattle. The N. part has a much greater portion of high trees, but they form forests of only small extent, which are separated from one another by large plains destitute of trees, overgrown with greasy high grass, and a few bushes. The lower districts of this part are favourable to the growth of cotton, the soil being rather dry and sandy.

The *Parahyba* originates in the most S. angle of the plain, near 10° S. lat., and traverses it in a diagonal line from N.W. to N.E. and N. Having no falls and only a few rapids, it is navigated by vessels of from 15 to 25 tons to its junction with the Rio das *Babus*, up to which place the *Karipoun* settlements on its banks are numerous. It empties itself into the sea by five mouths, the most remote of which are 30 m. from one another, measured along the shore. But as these mouths are not more than 20 to four fathoms deep, only vessels of moderate size can come up to the town of *S. João de Parahyba*. Its whole course may amount to nearly 500 m.; and, with the exception of the *Francisco*, it is the largest riv. that enters the sea between the Rio de la *Plata* and the *Amazonas*.

The climate of this plain is hot; the thermometer rises in summer above 100° and sometimes to 110°. The rains begin in Oct., and increase gradually to Feb., when they are most abundant; they terminate in April; but even in May it generally rains between three and four o'clock in the afternoon. The months of July, Aug. and Sept. are usually very dry. The prevalent wind is from the N., especially during the dry season.

The E. boundary of this plain is formed by the *Serra Itapahua* or *Hylapahua*, from which extends E. the mountainous country that forms the projection of Brazil, and terminates with the *capos* of *S. Roque* and *Augustinus*. It resembles, in some respects, the table-land of Brazil; but the mountainous plains are of less extent, and the valleys occupy proportionally a much greater part of the surface. Besides this, the tops of the mountains and their declivities are clothed with trees, while the low tracts are covered only with coarse grass and low bushes. Numerous rivs. traverse this country, but their course is comparatively short; they have also very little water, and are, consequently, not well adapted for navigation. Though the weather is more changeable here than in other parts of Brazil, it rains less; the rainy season begins only in Jan. and terminates in April. In this season vegetation is vigorous and rapid, but from Aug. to Dec. the country resembles a dusty desert. Sometimes, and as it appears in desiccated periods, there is no rain at all, and then both men and animals die of hunger and thirst.

Cape Augustinho (Augustin), in $8^{\circ} 20' 41''$ S. lat. and $34^{\circ} 58'$ W. long., is one of the most E. points of Brazil. About 300 m. from this cape, the great equatorial current, which traverses the Atlantic near the line, divides into two branches, of which the N. and by far the larger part runs along the N. coast of Brazil to the mouth of the Rio das Amazonas, and hence along Guiana to the West Indies. This current, combined with the trade-winds, which along these shores constantly blow from the E., renders the voyage from the N. parts of Brazil along this shore to the provinces S. of Cape Augustinho so tedious, that it is more easy for the inh. of this part to communicate with Europe and North America than with the S. provinces of the empire. The S. branch of the equatorial current, called the Brazil current, is at first of inconsiderable breadth, but it grows wide in 16° and 17° S. lat., where it is 250 m. from the coast. At Cape Frio it is only 200 m. distant, and runs 30 m. per day. Where the coast trends to the S.W., the current is farther off, but it approaches again within the same distance near the Morro de S. Marta, and so continues to Cape de S. Maria.

Between the coast and this current occurs a regular change in the winds and currents; and their direction depends on the position of the sun. When it is S. of the equator the winds blow from between N. and E. and the current runs S. or S.W.: when the sun is on the N. of the line the winds blow from between E. and S.E. and the current flows to the N. These regular and constant changes are very favourable to the intercourse of the maritime provinces of Brazil S. of Cape Augustinho.

We must here observe that the S.E. trade-wind of the South Atlantic ceases at a great distance from the coast of Brazil, and that other winds, especially from the N.E., are sometimes found to extend to the middle of the ocean. This is ascribed to the great extent of the South American continent, which has the effect of changing the trade-wind into a monsoon.

The cultivated lands in Brazil bear a very small proportion to the whole surface. According to the most favourable statements the former are 30,000 sq. m., or less than 1-75th of the surface. But this is evidently a very exaggerated estimate, and it is more probable that they do not amount to one-third of that area. With the exception of the immediate vicinity of the larger towns of Rio, Bahia, and Pernambuco, the farms occur at great distances from one another, even in the neighbourhood of the sea, and still more so farther inland. They are nearer one another in the E. district of the table land of the Paraná, about S. Paolo in the mining district near Villa Rica, and along the riv. Parnahyba in the prov. of Piauhly and Maranhão. Agriculture is carried on in a very rude manner. The forest-trees are cut down and burnt on the ground; the soil then gives rich crops for several years without manure. When it is exhausted it is abandoned, and another piece of ground is treated in the same way.

The aborigines of Brazil were not entirely unacquainted with agriculture, but it was limited to a few articles. They planted maize, bananas, *aipis* (*Manihot aipi*, Pohl.), mandioca, and capsicum. Since the arrival of the Europeans and Africans the cultivated plants have been increased more than tenfold in number, but still the cultivation of those which were grown by the aborigines is the most extended. The mandioca, of which different species are cultivated (*Iatropa manihot*, Linn.), is grown in every prov. except that of Rio Grande do Sul. Maize (*Zea Muis*, Linn.) is grown all over the country. In low and hot places the milho cadete, a species with smaller grains, is commonly cultivated; it yields twenty fold. The Milho de Serra, with larger whitish grains, is grown in the valleys of the table-land, especially in Minas Geraes, and yields 150 fold. Two crops are annually got, one in September and the other in May: the first is the most abundant. Rice (*Oryza sativa*, Linn.) is extensively cultivated on the plains as well as on the mountains, but especially in the provs. Maranhão and Para. Two species are used, a red and a white one, but the latter is preferred. In the low country it ripens in 4 months and gives abundant crops from 50 to 60 fold, in some places even from 200 to 300 fold. On the hills it ripens in 6 months, produces less abundant crops, and is not so good. No artificial irrigation is used. In some districts subject to inundation rice is found in a wild state, as in the Lagoa de Xarayes, and Martius found it also on the banks of the can. or Furo of Irariá, which divides the long island of Topinambas, or

more properly Tapinambarana, in the Amazonas, from the S. bank. The cultivation of wheat has been attempted in different districts, but not with much success, except on the table-land of the Paraná and the plains of Rio Grande do Sul, whence considerable quantities are brought to Rio Janeiro.

The banana (*musa*) is cultivated in the low plains and valleys along the coast and in the plain of the Amazonas. Potatoes do not succeed, except in Rio Grande do Sul; a certain quantity is annually imported from England, but sweet potatoes succeed wherever there is a good sandy soil. The *cara*, a root similar to the sweet potato, and superior in flavour, is less productive. The inbame (*Phoenix dactylifera*, Linn.), is likewise cultivated for its root, which, as well as its leaves, is eaten by men and pigs. Various kinds of beans are also cultivated.

The vegetables of Europe do not succeed well, being generally destroyed by the ants and other vermin; leeks however are an exception. None of the trees or plants cultivated in Europe for oil are found in Brazil. The inhabitants cultivate the sesamum (*Sesamum orientale*), which was brought from the E. I., and different kinds of the castor-oil plant. Lamp-oil is got from the fruit of a forest-tree called *andiroba* (*Carapa gujanensis*, Aubl., *Xylocarpus*, Schreb.), which is common in some districts, especially in the plain of the Amazonas. A species of palm (*Eurocarpus distichus*, Mart.) which gives an excellent oil for the kitchen, grows on the N. coast. The coca-plant (*Erythroyllum coca*), which is used by many of the aborigines of South America pretty much as the betel in India, is cultivated on the banks of the Yapurá, as in Peru. The maté-plant (*Cassine gongonha*, Mart.), which produces the tea of Paraguay, is a shrub which is cultivated in the prov. of Rio Grande do Sul and of St. Paolo. It forms a considerable article of export from some countries of South America, especially Peru.

Coffee, which was introduced into Brazil about 50 years ago, is now grown in most of the maritime provs. more especially in Rio Janeiro, the S. districts of Minas Geraes, and in Bahia. That of Rio Janeiro is the best, and more attention has been paid to its culture, it is considered equal to that of St. Domingo. The sugar-cane is most extensively grown in Bahia and along the banks of the Rio S. Francesco. The smaller variety, called canna da terra or canna creola, is the most common. The cultivation of this article does not increase so rapidly as might be expected, probably for want of sufficient capital. In other districts of Brazil the cultivation of the sugar-cane is less attended to, but from most of the maritime provs. a certain quantity is exported. Cotton has increased more than any other article of export. It may be grown as far as 31° S. lat., but is only cultivated to any great extent from 15° S. to the equator. The cotton of Pernambuco, in which that of Parahyba, Rio Grande do Norte, and Ceará is included, is hardly inferior to that of Georgia and Bourbon; and that which is raised in Piauhly and Maranhão is also in high repute; that of Bahia and Pará is of less value. In Pernambuco the cotton is gathered in July and August, in Maranhão in October, November, and December. On the banks of the Amazonas there are two trees, the mungaba and the samauma (*Eriodendron samauma*, Mart.), which produce a kind of cotton that is used to make felts and mattresses, but hitherto, we believe, the attempts to spin it have failed. The cultivation of tobacco, which formerly was very extensive, is now on the decline; but considerable quantities are still exported to Africa and to Europe. The best is grown in the Reconavo of Bahia, especially at Cachoeira and St. Amaro. In some other places also a tobacco is grown which is much esteemed, particularly at Guaratinguetá, S. Paolo. Martius thinks that some species of this plant are indigenous, and that the use of tobacco was general in South America before the arrival of Europeans. Tobacco was formerly much grown, but the cultivation has almost entirely ceased: little is exported, and that is of inferior quality. Ginger and the curcuma (*Curcuma longa*, L.) were once cultivated and exported from the N. coast, but both articles are now entirely neglected. In modern times the pepper-tree (*Piper nigrum*, L.), the cinnamon-tree (*Laurus cinnamomum*, L.), the clove-tree (*Caryophyllus aromaticus*, L.), and the muscat-tree (*Myristica moschata*, L.) have been planted near Rio Janeiro and Para, and the three first seem to succeed at Para. The trial with the muscat-tree has failed at Rio.

sometimes 20 ft. long, and weighs from 70 to 80 cwt. One fish often yields 480 or 500 gallons of oil, and its flesh, which resembles fresh pork, is excellent. Sausages are made of it, and sent to Portugal as a delicacy. It is a very peaceful animal, and rapidly decreasing in numbers. Its greatest enemy is the alligator, of which there are two species in the rivers of Brazil, the *crocodilus niger*, Spix, in the Rio Amazonas, and the *Croc. sclerops*, Schneid. in the Rio Francisco. The former is generally from 15 to 24 ft. long. The Indians eat its eggs and flesh, though the latter has a strong smell of musk.

There are several species of turtles in the Rio Amazonas, but that called *Tartaruga grande* (*Emys Amazonica*, Spix) is most common. Its flesh generally weighs from 9 to 10 lbs. The farms in the neighbourhood of the riv. have places well fenced, in which they are kept and killed as they are wanted. On some sandy islands of the Rio Amazonas, as well as the Madeira, Rio Negro, and Yapurá, the turtles lay their eggs when the water is lowest: the eggs are gathered, broken, and by means of a slow fire reduced to a fat substance, called *manteiga de Tartaruga*, which is extensively used all over Brazil. About 20,000 pots of this fat, each containing 60 lbs., are annually made, and several thousand persons are occupied in its preparation.

Snakes are common in Brazil, but the number which are poisonous, according to Freyriess, is not very large. He names only six poisonous species, among which the *klappersnake* and the *urutú* are the most dangerous. The larger species, which are not poisonous, attain eighteen or twenty ft. in length.

The insects of Brazil are remarkable for the beauty of their colours and their size, especially the butterflies. Some are very destructive to fruits or furniture, as the ants, of which one species is fried and eaten as a delicacy. Persons, more especially Europeans, who have just arrived in Brazil, suffer much from mosquitos, sand-fleas (*Pulex penetrans*) and some kinds of *conops*. The scorpion, which sometimes attains a length of six inches, the scolopander, and some kinds of caterpillars, especially those of the family of *hombyces*, cause swellings and excessive pains.

The domesticated bee of Europe is not known in Brazil; but Martius has enumerated more than thirty species of wild bees, nearly all of which are without stings, and it is supposed that some of them could be domesticated. In the prov. of St. Paulo the nopal tree grows, and the inhabitants have begun to collect cochineal. Several attempts have been made to introduce the silk-worm, but hitherto without success. Martius is of opinion that perhaps the pod of the *Philaena Atlas*, L., which abounds on the N. coast, could be used as a substitute for silk.

The mineral wealth of Brazil is considerable, but limited to a few articles, of which the chief are gold and iron, diamonds and topazes, and salt. Gold is found on both sides of the Serra dos Vertentes, from the Serra de Mantigueira to the N. branch of the Serra dos Paricis, for a distance of about 200 m., but farther on the N. than on the S. side. It is found, more or less, in almost all the rivers which form the upper branches of the Francisco, Tocantins, Araguay, and Guaporé, but by far the greatest quantity has been collected in the affluents of the Francisco. On the arrival of the first Europeans small pieces of gold were found in some places in the sand, and considerable quantities were collected in a short time. The greatest quantity, however, has been obtained by washing the sand from the bed of certain rivers, or the alluvial deposit on their banks. It is only in comparatively recent times that attempts have been made to work the mines in the mountains.

Before the beginning of the last century the quantity of gold obtained was inconsiderable, but it increased rapidly. The greatest quantity was found between 1753 and 1763, and since that time it has always been on the decrease. According to the incomplete accounts which Eschwege was able to obtain, he calculated that the whole quantity of gold collected between 1700 and 1820 amounted to 63,417 arrobas or 4,058,688 marcs, or about 33,822 marcs annually, including one-fifth which he thinks was smuggled out of the country. Between 1753 and 1763 it amounted annually to 34,560 marcs, but between 1801 and 1820 only to 8,128 marcs. In the two last statements the gold smuggled out of the country is not included; and it may amount to more than one-fifth, at least for the latter period, when the means of communication had been greatly increased. The decrease of the produce was mainly owing to the better portion of the

auriferous sand having been exhausted, and to the want of sufficient capital to work the veins in the mountains on a regular system. British capital has since been employed with success, and the productive mines at Congo Soco, near the Villa de Sabará, on the banks of the Rio das Velhas, a tributary of the Rio de St. Francisco, have been the reward of British enterprise. Iron is very abundant: in some places there are whole mountains of ore, but up to the present time it has been worked on an extensive scale only in two or three places. No silver has been found, and only slight indications of copper, tin, and quicksilver. Platinum occurs on the banks of the Rio Abaeté, a tributary of the Francisco, and in some other places. Lead and cobalt are more common.

No country probably is richer in diamonds than Brazil, but hitherto they have only been found in the rivers. The most W. streams in which diamonds have been discovered are some of the upper branches of the Paraguay. The diamond district, or the district of Tejuco, where by far the greatest quantity of diamonds has been found, is situated under 15° S. lat., and comprehends both sides of the Serra de Espinhaço. It is traversed by the Rio Iquetinhonha, an upper branch of the Rio Belmonte; the small rivers of the W. part of the district fall into the Francisco. In this district about 2000 persons are employed in collecting the stones by the government; and according to Eschwege, the diamonds collected between 1730 and 1822 were of the value of about fifteen millions of crusados, or one and a half millions sterling. He thinks that the value of what has been smuggled out of the country was probably less than this amount before the arrival of the royal family in Brazil, and that it afterwards doubled, owing to the more easy communication between the interior and the coast. In the accounts of Eschwege, the whole quantity of diamonds has been valued at the lowest price, that is, as stones weighing only one carat, and it may therefore be presumed that the real value was at least double what he has given.

To the S.W. of this district, on the Abaeté and Imbaú, both of which join the Francisco on the left bank, between 18° and 19°, there is another diamond district, which some years ago was worked but soon abandoned. In the Rio Abaeté was found, in 1791, the great diamond which weighs 138½ carats, and is the largest yet known. In the plain of the Rio Paraná diamonds are found in the Table, which falls into the Paranapanema, a tributary of the Paraná, whence it is said they are smuggled out of the country. The yellow topazes found near Villa Rica are also esteemed.

Brazil could not maintain its immense stock of cattle if the people were obliged to buy salt, without a supply of which the animals will not thrive. The table-land does not contain rock-salt, but a great number of small patches are on the surface covered with a salt efflorescence, which the cattle lick up. These patches, which generally do not exceed a few square yards, double the value of an estate. In other places salt springs occur, and serve the same purpose. There are also salt steppes, which resemble those on the table-land of Iran in Asia. Two of them are very extensive: one runs, on both sides of the Francisco, between 7° and 10° S. lat. from the Villa de Urubú to the Villa de Ioazeiro, with an average breadth of from 80 to 100 m.; the other is situated near the W. boundary of the empire, between the Paraguay and the Serra de Agoapehy, beginning on the banks of the Juruá, and extending in a S.W. direction for a great distance. In both districts the surface is slightly undulating, and the salt which appears on the surface after the rains is extracted by washing the earth, and leaving the water to evaporate. In some places, along the Francisco and in the prov. of Ceará, large caverns occur, the soil of which is impregnated with saltpetre. In other places, more especially on the Rio de Iquetinhonha, alum is found in abundance.

The inhabitants of Brazil consist of aborigines and of foreigners, who have settled here in the last three centuries. The aborigines are divided into a great number of tribes, but they so far resemble one another in figure, complexion, and habits, as to appear to belong to the same race. They are of a middling size and of slender make. Their complexion is a shining light copper colour, which sometimes passes into a yellowish brown; their hair is black, lank, and round; their eyes small, dark brown, and placed a little oblique; their cheek bones are prominent. All these characters indicate a resemblance to the race which inhabits the E. parts of Asia. They have little hair on the chin. It is remarkable,

that though these tribes agree so well in their external characters, they have all a different language, even if a tribe consists of only a few families, which is sometimes the case. It is true that most of these languages contain some common roots, but the resemblance is not so close that one can be easily understood or learned, because another is known.

These tribes are still in a very low state of civilization, but they are not unacquainted with agriculture. With the exception of one tribe called the Mairas, who live a wandering life all the aborigines of Brazil cultivate the ground and plant the two kinds of manioc, oranges and a species of palm tree. They have likewise divided their hunting-grounds, and marked those divisions by boundaries. Still they derive the greater part of their subsistence from the chase, the wild fruits of the forest, and from fishing. In some tribes the men and women go naked, in others the women have some stuffing. Certain tribes are cannibals and eat their victims, a fact well ascertained of the Abacaxis in Espirito Santo. But modern writers do not state that they kill their parents or relations and eat them, like the *Diets* of Samaria. Most of them seem to have a very imperfect idea of a Supreme Being, but they generally believe in an *Evil Spirit*. The number of these savage tribes probably exceeds 500 at least. Martine has enumerated 240; many of them consist of only one or two families. This is particularly the case with the tribes in the plain of the Amazon in the N. of the river, where the people live in a completely isolated state, and at great distances from one another. To the S. of that river, the tribes are much more numerous, and often consist of several thousand individuals. The *Mundurucos* on the *Tapajás* are said to amount to 14,000; the *Mandós* to 16,000; the *Guariçuris* in the plain of the *Paraguay* to 12,000; the *Chiriquios* on the *Paraguay*, an affluent of the *Paraná*, to 8000; and the *Chiricuis* on the *Arroyo*, also in 8000.

All the aborigines, who lead an independent and roving life, are called in Brazil *Indians* or *Genitas*, in contradistinction to the *Indians* named *domesticated Indians*, who have settled among, or in the neighbourhood of, the Europeans. It has always been the policy of the governments to induce a number of Indians to live in one place, and to accustom them to agriculture. But those measures have seldom produced the desired effect, so if they live, it has been observed that the Indians wasted away under various diseases, or returned at last to their former habits of life in the deep forests. Still there is a considerable number of these domesticated Indians, especially on the coast, where they perhaps amount to 20,000 individuals, as Freyre has conjectured. They were brought together by the Jesuits, and induced to settle in villages, called in Portuguese *aldeas*, where they were accustomed to agricultural life. But on the suppression of that order, the Indians left their *aldeas* and returned to the woods, where they now cultivate a piece of ground, hardly sufficient to raise them a bare subsistence, and employ their time chiefly in fishing and hunting. Their huts are better than those of the savage tribes, and they profess Christianity.

There are in addition no fewer than 100,000 negroes from Africa, who have been brought over as slaves, and for the most part are still in a state of slavery. The Portuguese and the negro have intermarried with one another, and have the *mulattoes*. The descendants of Europeans and negroes are called *Mulattoes*; those of Europeans and aborigines, *Amulattoes*; and those of the negroes and Indians, *Castanos*. The offspring of the *Mulattoes* and negroes, who are called *Chibros*, are also very numerous. The descendants of the negroes are called in Brazil *Chibros*. The *Amulattoes* are valued for their quiet disposition and their honesty.

The gross population of Brazil is yearly estimated, from three and a half to five or six millions; but the different independent aboriginal tribes, which still possess more than half the surface of the country, are not included in this account. It is conjectured that the negroes may amount to about one million of which number more than three fourths are slaves; and the descendants of Europeans is somewhat more. The remainder are *Mulattoes*, *Amulattoes*, *Castanos*, &c.

The land is divided into thirteen provinces, of which fifteen were erected along the coast, and four to the north. Along the coast, beginning from the N., are the following provinces:

1. *S. Paulo de Rio Grande do Sul* comprehends the

stony plain that stretches along the shore from the bay-head of the republic of Uruguay (Brazil) to the Rio Manso (Brazil), a small river, which enters the sea N. of the *Mora de S. Paulo*, and also the whole country between this plain and the Rio Uruguay. This prov. is rich in cattle and horses, produces the grains of Europe and Peru, as well as most European fruits; these also succeed very well. In the most N. districts along the Rio Uruguay there are still a few feeble tribes of independent Indians.

2. *S. Paulo*, the only harbour of this prov., is situated some miles from the mouth of the Rio S. Paulo, on a sandy tongue of land. Its vessels seldom approach near it, they remain on the E. bank of the river, at a place called *S. João*. *S. Paulo* contains between 2000 and 3000 inhabitants, and carries on an active trade with Rio Janeiro. Porto Alegre, the capital of the prov., situated on a bay formed by the Rio Jacuhy, is well built, and contains between 7000 and 8000 inh.

3. *S. Catharina* comprehends the hilly country along the coast between the Rio Maranhão and the Rio Sahy, which separates it from *S. Paulo*; and also the island of *S. Catharina*; it has between 97° 30' and 97° 40'. Here the grains and fruits of Europe succeed best, and with those of a better climate. It does not appear that there are any free native tribes in this prov., but they sometimes enter it from the W. side of the mountain-range. There are some good harbours on the coast, and the most frequented is that formed by the est. of *S. Catharina*. The island of *S. Catharina* is eleven m. long from N. to S., and from 4 to 6 m. wide; its surface presents a succession of hill and dale, and a great part of it is covered with fine trees; it abounds with water, and has some fine lakes. It is separated from the mainland by a strait, which in its narrowest part, where it is formed by two projecting capes, is not more than 100 fathoms wide. These capes divide the strait in two large parts, almost equal in size, and both very safe. The N. and larger part is 10 m. wide, and deep enough for ships of war; it is one of the best ports in South America. The town of *Nossa Senhora do Desterro*, the capital of the prov., is on the W. side of the isl. upon a bay, a little to the N.E. of the narrowest part of the strait. It has between 2000 and 3000 inh., and some small manufactures of linen and cotton cloth, and of pottery. Many sperm-oil whales are taken in the strait, and the oil is prepared in several places of the isl. and the adjacent mainland. Laguna, on the continent, has a harbour for coasting vessels, and exports grain, timber, and fish, which abound along this coast. *S. Francisco* crosses the boundary of the prov. of *S. Paulo*, and on arrival, has also a harbour for ships, and exports grain and a great quantity of timber and slaves.

4. *S. Paulo* extends over the greater part of the plain of the Paraná, namely, that part of it which lies on the E. of the Rio Paraná, and over the *Campanha Paranaica*, and the country from the Rio Sahy, to the bay called *Angra dos Reis*. On the table-lands cattle and horses are raised in great numbers, and grain, maulden, and rice are cultivated and exported. On the coast, sugar, tobacco, cotton, and a little coffee, are raised. The W. districts, along the Rio Paraná, from the mouth of the Rio Tiete to that of the Iguaçu, are still in possession of independent tribes; and this country to the N. of the Tiete is exposed to incursions from the *Uaupés*. This prov. has many good harbours for coasting vessels, and some thriving towns along the coast.

Iguapá, with 6500 inh., exports great quantities of rice (santol), the port of the town of *S. Paulo*, to which an excellent road leads over the mountains, is on the N. side of an isl. called *S. Vicente*, in the bay of *Ranús*, and has a harbour capable of receiving men-of-war. It has above 7000 inh., and carries on a very considerable trade. On the same isl., but at the S. shore is the town of *S. Vicente*, the first establishment of the Portuguese in Brazil; it is now only inhabited by fishermen. *S. Sebastião*, farther to the N., is on the strait of *Tapepe*, which is more than 2 m. wide, and separates the isl. of *S. Sebastião* from the continent. The town has a harbour for coasting vessels, 1500 inh., and exports timber and grain. Besides the town of *S. Paulo* (*S. Paulo*), which contains between 30,000 and 40,000 inh., there are two other considerable places in the interior, *S. Mateus* and *Curytiba*. *Sorocaba*, situated to the W. of *S. Paulo*, has 14,000 inh., and considerable trade in cattle and grain. In its neighbourhood is the *Barro de Araxá*, which is covered with iron ore, and consists entirely of iron ore. *Curytiba*, on the N. skirts of the *Camp*

pos da Vacaria, is said to have a pop. of 12,000. it sends the produce of that country to the coast.

At Porto Feliz on the Tiete, commences a very extensive water-communication, which unites the most W. districts of Brazil with the coast; but it is now much less used than formerly.

4. Rio Janeiro, comprehending the coast between the W. extremity of the bay, called Angra dos Reys, and the mouth of the Rio Cabapuána, extends from 50 to 60 m. inland. To it belongs the greatest portion of the Serra do Mar; and the Serra de Mantigueira stretches along its W. boundary. It is mountainous, but contains also extensive valleys. The grains of Europe do not thrive in this prov.; but rice, mandioca, and maize, are extensively cultivated. Coffee is raised to a greater amount than in any other prov., and cotton is also largely raised. Savage tribes occur only to the N. of the Rio Parahyba. It has some excellent harbours, especially those of Rio Janeiro, and of Angra dos Reys. The latter is formed by two isl., Ilha Grande and Marumbaya, lying in a parallel line with the coast, and contains some excellent roadsteads. Two of its three entrances are from 5 to 8 m. wide, with a depth of about 30 fathoms. This prov. does not contain any considerable town except Rio Janeiro, the capital of Brazil. [RIO JANEIRO.]

5. Espirito Santo extends from the Rio Cabapuána to the Rio Belmonte along the coast, and from 60 to above 100 m. inland. Some districts are hilly, but the greater part of the prov. consists of extensive low plains. A small portion of it is under cultivation, and produces sugar, cotton, rice, mandioca, and maize in abundance. Fish abound along the whole extent of the coast. The W. districts are occupied by the independent aborigines, among whom the Botocudos are distinguished by their bravery and cannibalism. Along the coast are the isl. called the Abrolhos. There are some harbours, but only fit for trading vessels. Victoria, or Nossa Senhora de Victoria, the capital of the prov., is on the W. side of an isl. 15 m. in circumference, in the large bay of Espirito Santo, which is deep enough for frigates, and has safe anchorage. The town contains 12,500 inh., who carry on an active commerce in the produce of the country. Caravellas, the most commercial town of Espirito Santo, is opposite the Abrolhos, on the riv. Caravellas, which is only an arm of the sea extending 10 m. inland, of considerable width and very deep; but the entrance is only accessible to small vessels. The town, which contains above 4000 inh., exports chiefly mandioca, flour, and fish, the garoupa being taken in great numbers near the Abrolhos and the reef extending E. of them. Porto Seguro, near the mouth of the small riv. Buranhen is a considerable place, with a good but not deep harbour. Its inhabitants are principally occupied in the garoupa fishery.

6. Bahia. [BAHIA; ST. SALVADOR.]

7. Serecipe del Rey comprehends the country to the N. of the riv. Rio Real, as far as the embouchure of the Francesco, and 140 m. inland. Its surface is a plain, with the exception of a few hills; but the W. portion is considerably higher than the E., which is covered with forests, intermingled with patches of cultivated ground. The W. country is generally stony, with few woods or fertile tracts, and is very deficient in water. It supplies only very indifferent pasture for cattle. In the E. district the plantations of sugar and cotton are numerous. There are no independent tribes in this district. The harbours are formed by the mouths of the rivers, which are neither large nor deep.

Serecipe, the capital of the prov., is situated near the riv. Paramopama, an arm of the Rio Vazabarris, 18 m. from the sea: coasting vessels come up to the town. It has a sugar-house, a manufactory of tobacco, and some tan-pits. The pop. is stated by Schäfer at 36,000, but this seems an exaggerated estimate. Estancia, the most populous and commercial town in the prov., 18 m. from the sea on the Rio Real, carries on an active commerce in the produce of the country.

8. Alagoas (Dos) extends along the shore from the mouth of the Francesco, to that of the small riv. Una, and about 140 m. inland. It resembles in aspect the prov. of Serecipe, the W. districts being sterile, and producing in the E. districts the same articles, with tobacco besides. There are no independent tribes in this province. It has two good harbours, the united ports of Jaragua and Pajua-

sara, and the bay of Cururipps. Alagoas, the capital, is on the S. side of the lake of Manguaba, which is 30 m. long, 3 m. wide in the widest part, and connected with the sea by the riv. Alagoas. Porto Calvo, situated upon the margin of the riv. bearing the same name, 20 m. from the sea, exports a great quantity of dye-woods. Penedo de S. Francesco, a populous and commercial town, on the banks of the Francesco, about 25 m. from its mouth, contains 11,000 inh.

9. Pernambuco consists of two parts, one on the coast, and the other on the table-land. The latter is distinguished by the name of Sertão de Pernambuco. The country along the shores extending between the riv. Una and Goyanna is in general flat, but farther inland it presents a succession of hill and dale, intermixed with some level grounds of considerable extent. Where it approaches the Sertão the surface is stony and sterile. The Sertão, which extends along the left banks of the Rio S. Francesco, between the prov. of Bahia and Goyaz, as far as the Rio Carinheira, an affluent of the Rio S. Francesco, (near 15° S. lat.) is a portion of the table-land of Brazil, and comprehends the greater part of the salt steppes already described. Other portions however afford excellent pasture for cattle, and on the banks of the riv. the plantations of cotton are rapidly increasing. Besides the common productions of tropical climates, sugar and cotton are cultivated, and dye-woods are got in the forests, nearly 100 m. from the sea. The independent tribes, which existed in some parts of the Sertão, have lately been subjected or expelled. The numerous harbours are only adapted for small craft, except those of Itama, Recife, and Tamandare. The port of Catuarua is at the N. entrance of the strait, which divides the bay of Itamaraca from the continent, and near the N. part of the coast. Recife is the harbour of the town of Pernambuco, and the port of Tamandare lies about 30 m. S.W. of Cape S. Augustinho. The last named is the best, and capable of holding large vessels, being 4 and 5 fath. deep at the entrance, and 6 fath. within.

Beside the towns of Recife and Olinde, which comprise the t. of PERNAMBUCO, there is Goyanna, at the junction of two rivers, 15 m. from the sea, which exports considerable quantities of cotton. It has above 5000 inhabitants.

10. Parahyba do Norte extends about 60 m. along the coast from the Rio Goyanna to the bay of Marcos, and 20 m. at its greatest width, from E. to W. More than two-thirds of its surface have an arid soil and are not cultivated. The cultivated lands are in the vicinity of some rivers and on the mountain-ridges, which are generally covered with trees and have a strong soil. The principal products are sugar, cotton, mandioca, maize and tobacco, with excellent fruits. Its few ports can only receive small vessels: that from Cape Branco a reef extends nearly 18 m. N., between which and the beach there are 9 and 10 fath. water, in which vessels can ride in safety.

Parahyba is on the right bank, 10 m. above the embouchure of the riv. of the same name, which, though about 3 m. wide at its mouth, allows ships to ascend only for 3 or 4 nothing but smacks can come up to the t., which contains above 12,000 inh., and its commerce in the produce of the prov. is considerable.

11. Rio Grande do Norte extends along the coast from the bay of Marcos to a range of hills called the Serra of Apody, by which it is separated from Ceará, and it runs 100 m. inland. Its surface is generally uneven and hilly: at a few places it rises into mountains; forests, however, are rare and of no great extent. In general the soil is very dry and adapted to the cultivation of cotton, in addition to which mandioca and maize are raised abundantly. Along the riv. Apody near the boundary of Ceará and a few others, are several salt-lakes, from which great quantities of excellent salt are extracted. No independent Indians at present exist here, but the descendants of the aboriginal tribes are numerous. The few harbours of this extensive coast are not deep. Natã, the capital of the prov., is advantageously situated on the right bank of the Rio Grande, near 20 m. above its mouth. It has also an easy communication with the inland districts, the riv. being navigable for large boats near 40 m. Its commerce in the produce of the country is increasing, and the pop. is about 18,000. The town of Fernando de Noronha, 3° 30' S. lat., about 250 m. E. N. E. of Cape S. Roque, belongs to this prov. It is 10 m. long, generally hilly and stony, with a few small porticoes of land capable of cultivation. Convicts are transported here.

12. Seará, or Ceará, extends from the Serra Appody to the Serra Hibiapaba, which terminates between the riv. Camucim and Parnahyba, in hills not far distant from the sea, and separates it from Piauhy. It is computed to measure, from N. to S., above 300 m. The surface of this prov. is generally uneven, but the valleys are wide and not deep; the elevations are not great, except towards the S. and W. boundary-line. The soil is in general sandy, arid and sterile, except on the broad summits of the mountains, where it is rich and covered with forests. In the latter districts grain and mandioca are cultivated. Along the rivers cotton is grown. The district about the upper branches of the Rio Jaguaribe, the principal riv. of the prov., is the most fertile and populous. This prov. often suffers much from long droughts. The descendants of the aborigines are numerous, especially in the less fertile districts. The shores, which in some parts are steep, in others flat and sandy, have no ports except for small coasting vessels.

Seará, the capital, is situated near the beach, about 7 m. N. W. of the mouth of the riv. Seará. It has no harbour; about 10,000 inh., and very little commerce. Aracaty, on the E. bank of the Jaguaribe, 8 m. above its mouth, is the most commercial and populous town in the prov. It has 26,000 inh., and exports cotton and hides in large quantities. The tide, which runs 30 m. up the riv., facilitates the navigation. Sobral, not far from the bank of the Camucim, the second town in commerce and pop., is about 70 m. from the sea. Its port is Granja, on the left bank of the Camucim, 20 m. from the sea.

13. Piauhy has only a coast of about 60 m. between the Serra Hibiapaba and the mouth of the Rio Parnahyba, which riv. divides it from Maranhão; but it extends 400 m. inland to the source of that riv. This prov. is only hilly on the boundary-line of Seará and Pernambuco; it is particularly adapted to the breeding of cattle, the pastures in the southern portion of the plain of the Parnahyba being extensive and excellent. Besides cattle, cotton is exported, and, in addition to other grains, rice and mandioca are particularly cultivated. Independent tribes still exist in the S. district, between the rivers Parnahyba and Gorguea. It has no port, except that formed by the E. mouth of the Rio Parnahyba, called Higurassu. Oeyras, the capital, is situated on a small riv., which, three m. lower down, falls into the Caninde, a tributary of the Parnahyba. It is a small town with 1700 inh. Parnahyba lies on the Higurassu, the E. and most considerable branch of the Parnahyba, 15 m. from the sea, and carries on an active trade in hides and cotton. Its pop. amounts to 2600.

14. Maranhão comprehends the western portion of the plain of the Parnahyba, extending along the coast 350 m. from the western mouth of the Rio Parnahyba to that of the Turyvassu, and nearly 400 m. inland. It is more hilly than Pianhy, especially in the S. districts, but towards the sea extremely productive in rice and cotton, which are exported in large quantities. All the S. and central districts and most of the W., forming all together perhaps more than half the prov., are still occupied by independent tribes. It has some good harbours, the best of which are the bays of S. Jozé and of St. Marcos, formed by the isl. of Maranhão, which is 20 m. long from N. E. to S. W., and 15 m. its greatest width. To the W. of the bay of S. Marcos, the shores are skirted by a series of small and low islands up to the bay of Turyvassu, the limits of the prov. on the side of Pará. Besides the capital, S. Luiz de Maranhão [MARANHÃO], it contains two considerable places, Alcantara and Cachias. Alcantara, on the W. of the bay of S. Marcos, which has a port capable of receiving large coasting vessels, is a large well-built town, and carries on a considerable trade in the produce of the country. Cachias is situated on the Itapicurú, where that riv. begins to be navigable for large barges, in a district which is productive in cotton: it is a considerable thriving town. Its pop. may amount to 10,000.

15. Pará is the largest of the prov. of Brazil, extending from the Rio Turyvassu, W. nearly to the isl. of Tupinambarana, along the S. bank of the Amazonas; and farther to the S. to the E. banks of the Rio Madeira. This portion of Pará comprehends the greater part of the plain of the Rio das Amazonas, and also considerable portions of the tableland; nearly the whole of it is still in the possession of independent tribes, the European settlements being very small and at great distances from one another. They only occur on the banks of the Rio das Amazonas, and at the mouth of

its larger affluents. On the banks of the Tocantins and Madeira, which two rivers have been navigated for some time, there are also a few feeble settlements, but none on those of the Xingu and Tapajos, nor on the rivers between the Madeira and Hyabary. As some attempts have been recently made to navigate the Tapajos, it is probable that new settlements may be made on that riv. In this portion of the prov. of Pará, is the capital, Pará [PARÁ], and the following places:—Braganza or Cayté, on the banks of the riv. Cayté, about 20 m. from the sea, is an old town and a considerable place; the port is often resorted to by the coasting vessels which navigate between Maranhão and Pará. Cameta, the most considerable t. next to Pará, is situated on the left bank of the Tocantins, above 30 m. from its mouth. It has considerable trade with Pará and the prov. of Goyaz, and about 8000 inh. Santarem, near the mouth of the Tapajos, is the depôt of the numerous articles of commerce collected in the forests around it and farther up the Amazonas; it is also visited by barges which navigate towards the country farther W. It has above 2000 inh.

The prov. of Pará comprehends also a considerable tract N. of the Amazonas, from the E. coast to the Rio Nhamunda. This tract, which is considered as part of Guiana, is almost entirely occupied by independent tribes. The few European settlements only occur on the sea-coast and on the banks of the Rio Amazonas. The most important are:—Macapa, at the mouth of the can. of Braganza, the principal branch of the Rio Amazonas, opposite the Archipelago of isl. which that great riv. forms here. It is a considerable town with a fortress, and carries on an active commerce in the produce of the country. Its pop. is above 2000. Montalegre, situated on a small isl. in the riv. Gurupatuba, 7 m. from its junction with the Amazonas, is a considerable place, and has some trade. Obydos, formerly Panxia, is near the E. mouth of the Rio Oriximina, which joins the Amazonas. In this place, at the distance of about 700 m. from the sea, the Amazonas runs in one channel, about 900 fathoms wide, and up to this point the tide ascends. It has some commerce and nearly 2000 inh.

Between the town of Macapa and Cape do Norte a narrow channel extends along the coast, which is formed by some islands that line the coast at a short distance from it; in this channel the current called pororôca, is most strongly felt. At full and change, the tide, instead of gradually rising in six hours, attains its greatest height in a few minutes, and is accompanied with a terrific noise. [BORE.]

The isl. of Marajó or Ilha dos Joannes is the largest isl. of Brazil, extending above 90 m. from N. to S., and at least 120 from E. to W. It perhaps contains about 10,000 sq. m. The N. shores are washed by the sea, the W. partly by the principal branch of the Rio Amazonas and partly by the can. of Tagipuru, which unites the great riv. to the Rio das Bocas, a fresh-water bay, at the E. extremity of which the Tocantins has its embouchure. This bay and the Rio do Pará enclose the isl. on the S. and E. Its surface is even, and its own numerous rivers, some of which have a course of 70 or 80 m., inundate, in the rainy season, considerable tracts on the W. and S. side. About one-half of the isl., consisting of that part which borders on the ocean and the Rio de Pará, is nearly without wood and pastured by great herds of cattle and horses; the other half is covered with high trees and abundance of underwood. The pop. is probably not much above 10,000.

16. S. Jozé do Rio Negro, which is not much less than Pará, extends likewise on both sides of the Amazonas; on the N. side between the Rio Nhamunda and the limits of the rep. of Ecuador; on the S. between the Rio Madeira and the Hyabary, the limit towards Peru. The isl. of Tupinambarana is included in this prov., and also the country S. and E. of it. The European settlements here are still less numerous and less important, and are only found on the Rio Negro and its tributary, Rio Branco, on the Yapurá, and the Madeira, except a very few on the Rio Amazonas. The country between the Madeira and Hyabary has never been visited by Europeans. N. of the Amazonas are many small tribes, and S. of it the numerous tribes of the Mundrucús, Mahés, Muras, and others. Barra do Rio Negro, the capital, is situated on the banks of the Rio Negro, about 4 m. from its mouth, and contains above 3000 inh. Tabatinga, on the Amazonas, situated near the boundary-line of Ecuador, is a very small place.

The isl. of Tupinambarana, which is above 150 m. long, lies near the S. bank of the Amazonas, from the mouth of

the Madeira W. Between it and the main land on the S. is a large, deep, and navigable channel, called can. de Irarã, into which many riv. empty themselves. When the Madeira is swollen, the current runs through this channel E.; but in the dry season it runs partly in the Madeira, and partly to the Amazonas, by different mouths. The isl. is low and covered with impenetrable woods. Nearly in the middle it is divided by a narrow strait called the Furo dos Ramos, which unites the Irarã with the Amazonas.

17. Matto Grosso (Great Forest) occupies the centre of S. America. It comprehends the greater portion of the table-land between the Madeira and the Araguay, the tributary of the Tocantins, the portion of the plain of the Upper Madeira belonging to Brazil, the plain of the Paraguay, and the W. portion of the table-land of the Paraná, up to the banks of that riv. A great portion of the table-land N. of the Serra dos Vertentes seems to be a desert of little value, of which the Campos dos Paricis are the worst part; and no Europeans are settled here. The table-land of the Paraná is better, and has extensive pastures; but it is still entirely possessed by the independent Indians, more especially the Cájapos. But on the riv. falling into the Paraguay, there are numerous European settlements, though they are generally small. In many places gold is found, which circumstance gave rise to the settlements, though the mines at present are poor or neglected. The low country on both sides of the Paraguay is mostly occupied by the Guaicurús. On the plain of the Upper Madeira, along the banks of the Guaporé, there are also many European settlements: gold abounds here; but the greater part of the country is possessed by independent tribes.

Villa Bella, the capital, a considerable town, situated near the Guaporé, has 25,000 inh. and considerable mines in its neighbourhood. Cuyaba, not far from the banks of the Rio Cuyaba, an affluent of the Rio de S. Lourenço, which is a tributary of the Paraguay, is noted for the quantity of gold which was found here in the beginning of the last century. It is still a considerable place, though the mines have greatly fallen off. Villa Maria, on the E. bank of the Paraguay, in a very fertile country, is a thriving town.

18. Goyaz occupies the centre of the Brazilian table-land, including the basin of the Tocantins to its confluence with the Araguay and the countries on the E. bank of the Araguay, together with the hilly country on the Paranahyba, an affluent of the Paraná. European settlements are common only on some of the upper branches of the Tocantins and Araguay, where gold was found in abundance. There are a few small settlements along the Tocantins up to its confluence with the Araguay. By far the greater portion of the country is in possession of independent tribes; among which the Cájapos on the Paranahyba, and the Chevantes, between the Tocantins and Araguay, are the most numerous. Villa Boa, the capital, situated on the Rio Vermelho, an affluent of the Araguay, in a country rich in gold, contains 7,000 inh. Nossa Senhora do Pilar, a considerable place near the ridge, which divides the affluents of the Tocantins from those of the Araguay, is in the neighbourhood of some rich gold mines. Natividade, a town 35 m. from the E. bank of the Tocantins, is the most commercial place of the prov.: it sends its produce to Bahia.

19. Minas Geraes comprehends the E. end, and, as it appears, most elevated portion of the Brazilian table-land along the upper course of the Rio de S. Francisco, together with the most N. part of the table-land of the Paraná. It is rich in gold, iron, and diamonds. Gold is found, particularly in the upper branches of the Francisco and its two affluents, the Paroapeba and Rio das Velhas; and diamonds in the Iquetimbonha and Abaeté. The countries about these riv. are well settled by Europeans, except the Abaeté; but a large portion of the prov. is possessed by Indian tribes, among which are the Botocudos, the Purús, and the Coroados. Villa Rica, since 1822 called Villa Imperiale del Oro Preto, the capital of the prov., is situated near the Serra Itacolomi, in the midst of mountains rich in gold: it has 8,200 inh. Marianna, at no great distance further to the E., has also considerable mines in its neighbourhood, and 7,000 inh. S. João del Rey, on a small riv. which unites with the Rio Grande, the principal branch of the Paraná, has above 6,000 inh. In its vicinity are some mines, but it derives more importance from the road between S. Paolo and Villa Rica passing through it. Sabará, on the Rio das Velhas, contains 6,000 inh. In its neighbourhood are considerable mines, among which are the rich mines of Congo

Soco. Tejuco, the capital of the diamond district, and the seat of its administration, is situated between high mountains, on the small riv. S. Antonio, which falls into the Iquetimbonha: it has 6,000 inh. In its neighbourhood is Villa do Principe, which is nearly as large.

The communication between the prov. of Brazil is not easy so far as it can be effected by sea or the Rio Amazonas. The mountains dividing the table-land from the coast are in general steep and difficult to pass. There are only three roads over them. The most S., which leads from Santos to S. Paolo, is a carriage-road, and the best of all. Another road leads over the Serra da Mantigueira from Rio de Janeiro to Villa Rica, but it can only be travelled on horse-back. The third, which runs from the banks of the Rio S. Francisco to Jacobina, and thence to Bahia, is the worst. Between Goyaz and the country further E. are two roads. One passes from Villa Boa to Villa Rica, and the other from Natividade to the Rio S. Francisco. The country further W. communicates with the E. part only by one road, which runs from Cuyaba to Villa Boa; another road connects Cuyaba with Villa Bella. But the last-mentioned road was made, the prov. of Matto Grosso communicated with Rio Janeiro by the way of S. Paolo, and by an inland navigation of great difficulty. Departing from Villa Bella, the barges ascended the Rio Alegre, an affluent of the Guaporé, whose upper course is separated from the Rio Agoapehy by a portage of only 4800 yards. Hence they descended the Rio Agoapehy and Jaurú to the Paraguay. From the Paraguay they entered the Tacoary, afterwards the Cochim, and lastly the Campaio. Where the navigation on this riv. ceases, there is another portage of 7 m., by which the riv. Sanguissuá is reached. This riv. unites with the Rio Vermelho, and they fall into the Rio Pardo, a tributary of the Paraná. The Paraná was then ascended to its junction with the Tocantins, and this latter riv. was then navigated as far as Porto Feliz. The remainder of the road to S. Paolo and Rio Janeiro is by land. This route has been almost abandoned since a road has been made between Cuyaba and Villa Rica.

A road passing through João del Rey connects S. Paolo with Villa Rica; and another passing through Oeyras and Cachias connects Bahia with Maranhão.

The navigation on the Rio das Amazonas and the Rio Paranahyba is easy, but that on the Madeira has been almost entirely abandoned, on account of the great number of cataracts. The Tocantins and Araguay are navigated with difficulty; but the Tapajos seems to present fewer obstacles.

Commerce of Brazil.—The scarcity of the means of inland communication prevents the prov. of Matto Grosso, Goyaz, which lie at a great distance from the sea, from bringing their agricultural produce to any market, and their export is consequently limited to gold and diamonds. Minas Geraes, which is connected by tolerable roads with Rio Janeiro, Bahia, and S. Paolo, and also enjoys the advantage of an easy navigation on the middle course of the S. Francisco, exports its gold and precious stones, and coffee and cotton: S. Paolo exports its more bulky and heavy products by the port of Santos.

The foreign commerce of Brazil is more extensive than that of any other country of America, except the United States. The vessels of all nations are admitted on the same conditions, and their cargoes pay the same duties. The most important articles of exportation are sugar, 1,500,000 cwts. annually; coffee, 720,000 cwts.; and cotton, from 200,000 to 250,000 bags. The exportation of cocoa, hides, tobacco, rice, horns and horn-tips, dye-wood, sarsaparilla, and indiarubber is also considerable. The smaller articles are tea, glass, indigo, castor-beans, castor oil, and different drugs.

The following are the ports frequented by European vessels. From S. Pedro in Rio Grande do Sul are exported three-fourths of all the hides brought from Brazil; formerly they were sent chiefly to Rio de Janeiro, and a few to Bahia, but now a considerable portion is exported direct to Europe, and chiefly to Antwerp. The greatest part of the jerked beef which is prepared in the prov. is consumed by the slaves in the S. prov. of Brazil; but a part is exported to the Havanna, as well direct from S. Pedro, as from Porto Alegre and Rio Janeiro. Wheat and tallow go to Rio Janeiro. Santos sends the numerous productions of S. Paolo to Rio Janeiro; and also a few cargoes of rice and some sugar to Europe, chiefly to Lisbon: a considerable part of the salt exported from Rio Janeiro is brought from Santos.

Rio Janeiro exports a great quantity of coffee, which is

amounts to 550,000 bags annually, being ten times the quantity exported from all the other Brazilian ports. It is sent to all parts of Europe, chiefly to Antwerp, Hamburg, and Trieste, as well as to the United States. Next to coffee, sugar is an important article of exportation, being from 16,000 to 18,000 cases annually: it goes almost entirely to Europe, and chiefly to Hamburg; but when European prices are low, part of it has occasionally been sent to Buenos Ayres and round Cape Horn. The smaller articles are hides, brought from Rio Grande do Sul and S. Paolo, rum, dye-woods, and drugs: the first two are considerable.

Bahia, or S. Salvador, is the principal port for the exportation of sugar, which annually amounts to from 50,000 to 60,000 cases. It also exports 40,000 bags of cotton, some tobacco, rum, rice, cacao, rosewood, and drugs. The sugar goes principally to Hamburg and Trieste, and the cotton to England, a small portion only being sent to France. To Lisbon and Oporto are sent part of the sugar tobacco, rum, and cacao, and all the rice; and to the coast of Africa much rum and the inferior quality of tobacco.

Pernambuco supplies cotton, sugar, and Brazil-wood. The cotton, amounting to above 100,000 bags annually, comes mostly to England; the sugar being less fit for refining, is distributed in small portions to many markets: it amounts to about 15,000 cases. The Brazil-wood of best quality is found in the neighbourhood of Pernambuco, and is exported on account of the government, which has a monopoly in it. Though this article is also found in the provs. of Rio Janeiro and of Bahia, it is of a quality so inferior to that grown near Cape S. Roque as to bear no comparison in value. The smaller articles are hides, cocoa-nuts, ipecacuanha, and other drugs.

Maranhão exports chiefly cotton, rice, tapioca, hides, and horns, with isinglass and some drugs. The cotton, amounting to about 50,000 bags, goes chiefly to England (36,000), and the remainder to Portugal and Spain. The rice and tapioca (mandioca flour) is sent to Portugal. The hides (100,000) are divided between England and the United States: France and Belgium receive only a small number. What is called Maranhão cacao is the produce of Pará, and is not now exported at all from Maranhão.

Pará, though a larger town than S. Pedro and Santos, is a place of much less trade: its exports consist of a greater variety of articles. Cacao is the chief article; next to it India-rubber, then isinglass, hides, cotton, castanha-nuts, and many kinds of drugs. In some years a very little sugar has been exported, but in general both Maranhão and Pará require supplies of that article from the S. provinces.

Foreign vessels have begun to enter the ports of Seará, Aracaty, and Parahyba, but the commerce of these towns is comparatively insignificant: from the first are brought some few cargoes of cotton, and from the two last sugar and cotton.

On the whole, nearly all the sugar of Brazil finds a market at Hamburg, Trieste, and Portugal; the rice is, with a trifling exception, sent to Portugal; the coffee is divided between the continent of Europe and the United States, the latter having increased their imports to nearly one-third of the whole quantity in late years. Almost all the cotton, rosewood, India-rubber, and isinglass is brought to England. The hides are distributed between England, the continent of Europe, and the United States. The tobacco is sent to Portugal and to Gibraltar, previous to being smuggled into Spain; and to the coast of Africa. The rum, which is exported, finds a market chiefly on the African coast, and in some ports of Portugal.

The annual exports from Brazil may be estimated at about 5,000,000*l.*, of which nearly one-half is exported to England by British vessels; of the remainder about three-fourths go to the continent of Europe in Swedish, Danish, Portuguese, and Hamburg vessels, and the rest is carried to America.

The imports into Brazil may likewise be estimated at about 5,000,000*l.* More than four-fifths are brought from England and its colonies in English vessels. The most important article is cotton fabrics, which amount to nearly 1,500,000*l.*; next to these, woollen articles, linen, brass and copper ware, butter and cheese, iron and steel, wrought and unwrought, hardware and cutlery, hats, arms and ammunition, soap and candles, and tin. Many cargoes of cod are sent from the British fisheries in North America; and from the British colonies potashes, India cotton piece-goods, silks and spices. Nearly the whole of this commerce is carried on by vessels from London and Liverpool.

France sends to Brazil, chiefly from the ports of Havre and Brest, some articles of fashion, trinkets, furniture, wax candles, hats, dry fruits, some glass goods, and wine. From Holland and Belgium are sent beer, glass goods, linen, Geneva, and paper; from Germany, Bohemian glass, linen, and iron and brass utensils; from Russia and Sweden, iron, copper utensils, sail-cloth, cords, ropes and tar; from Portugal, wine, brandy, fruits, hats, and European manufactures; from the United States, considerable quantities of wheat, flour, biscuits, soap, spermaceti candles, train-oil, tar, leather, boards, pitch, potashes, and some rough articles of furniture and coarse cotton cloth.

The maritime intercourse between Brazil and the neighbouring republics is not considerable. The most active is that carried on with Buenos Ayres, to which sugar, tapioca, and some other agricultural products are sent, and whence the Paraguay tea or maté is brought back.

Formerly an active trade was carried on with the coasts of Africa, whence, in some years, 40,000 slaves were imported, chiefly from Benguela, Cabinda, and Mozambique. But the slave trade has been abolished, and since that time the traffic has probably much decreased. From Mozambique are imported gold-dust, ivory, pepper, Columbo root, ebony, and some East India goods; from the western coasts of Africa, wax, palm-oil, ivory, ground-nuts, sulphur, and some gum-arabic; from the Cape Verde islands, sulphur, gum-arabic, and salt. The intercourse with Goa and Macao is not great. From these places are brought cotton piece-goods, fine muslins, and printed cottons, silk stuffs, porcelain, tea, India ink, cinnamon, pepper, and some camphor. For some years after the opening of the Brazilian ports to free trade, nearly all the commerce was with England and Portugal; but on the general peace in Europe in 1814, the northern ports of the continent began to participate in it. As almost all the most important products of Brazil are excluded from consumption in England by enormous duties, other countries are gradually, though slowly, supplanting the British in the Brazil trade.

Probably the British trade with Brazil is on the whole greater now than ever it was, but it by no means comprises the same proportion of the whole of the Brazilian commerce. The whole trade of Brazil has certainly increased very considerably, and though the English share in this trade has also increased, yet its proportion to the whole is not what it once was. For some years British shipping carried nearly the whole produce of Brazil, but now it carries less than two-thirds. North American, Hamburg, Swedish, and other flags have entered into competition with the British, and so successfully, that the Americans are annually acquiring a larger share of the trade. The principal cause of this change is that the bulky articles, such as Brazilian sugar, coffee, and cacao, being loaded with heavy duties in England, are consumed wholly in other countries, and only brought to England for re-exportation; but by carrying these articles direct to the countries of their consumption, much expense is saved, and in doing this foreigners employ their own vessels. The only chance the British have for securing the important carrying trade in Brazilian produce would be by a material reduction of the duties in England.

History.—Brazil was discovered in the last year of the fifteenth century. The voyages of Columbus and Vasco de Gama, who first sailed across extensive seas, had taught navigators to adopt the practice of entering at once upon the open ocean. Accordingly Pedro Alvares de Cabral, who, after the return of Vasco de Gama, was sent by the king of Portugal with a large navy to the East Indies, directed his course from the Cape Verde islands to the S.W., and was carried by the equatorial current so far to the W. that he found himself very unexpectedly in sight of land in 16° S. lat. This country was Brazil, which he saw first on the 3rd of May, 1500. He sailed along the coast as far as Porto Seguro (16° S. lat.), where he landed and took possession. He sent an account of his discovery to Lisbon, and continued his voyage to India. The king afterwards sent Amerigo Vespucci, a Florentine, to examine the country, who took a rapid survey of nearly the whole of its shores, and upon his return published an account of it, with a map. To this publication this navigator is indebted for the honour of having given his Christian name to the new continent.

Vespucci, and others who were sent somewhat later, reported that the country was not cultivated, and did not offer any great commercial advantages, but that they had found

extensive forests of Brazil-wood, of which they brought some cargoes to Portugal. This was not sufficient to induce the Portuguese to form a settlement, especially as they were then actively engaged in their conquests in the East Indies; but it was quite enough to induce mercantile speculators to send their vessels for the dye-wood. This trade continued for some years, and the merchants of other nations, especially the French, began to follow the example of the Portuguese. This was considered by the Portuguese government as a violation of their rights as discoverers of the country, and they accordingly began to think of forming a permanent establishment. King John III. however, on calculating the expenses necessary for such an undertaking, thought it more advantageous to invest some of the richest noble families of Portugal with the property of extensive tracts of coast, for the purpose of colonizing them with Portuguese subjects. Accordingly, about ten or twelve Portuguese noblemen obtained the property each of about 100 leagues of coast, and 40 or 50 leagues inland. These proprietors were called *donatarios*. Most of them made great sacrifices, and underwent much fatigue and danger in forming settlements in Brazil. The towns of S. Vincent, Espirito Santo, Porto Seguro, and Pernambuco were founded by them between 1531 and 1545. But it soon became evident that the private fortune of these noblemen was not adequate to the establishment of such settlements in an uncultivated country, and in the neighbourhood of warlike savage nations. The king therefore sent, in 1549, as governor to Brazil, Thomé de Sousa, who founded the town of Bahia in the bay of Todos os Santos, and established a regular colonial administration. The government gradually found means to acquire the property of the colonies then existing from the *donatarios*, either by purchase or by exchange.

Before the religious divisions in England began to people the coasts of North America, the Protestants of France made a similar attempt in Brazil. A colony of French Protestants was established in 1555, on an island in the bay of Rio Janeiro, by Nicolas Durand de Villegagnon, but it soon fell into anarchy. The Portuguese attacked it in 1565, and expelled the French, though not without encountering considerable resistance. On this occasion the town of Rio Janeiro was founded by the Portuguese.

On the death of King Sebastian, when Portugal was united to Spain (1580), the numerous enemies of the latter country began to annoy Brazil, among whom the English, under Thomas Cavendish, were the most active. They did not however form any settlement. The French made a second attempt in 1612 to settle on the isl. of Maranhão, where they founded the town of S. Luiz de Maranhão, but in 1615 they were compelled to abandon it to the Portuguese. The Dutch were more formidable enemies to the Portuguese. Their East India Company had already taken from them many settlements in the Indian seas, and their West India Company was thus invited to similar attempts in America. In 1623 they sent a fleet to Brazil, which took Bahia, then the capital of the country; but it was lost again in 1625. In 1629 the Dutch made another attempt, and possessed themselves of Pernambuco, from which the Portuguese were unable to dislodge them. They also extended their conquest S. to the mouth of the Francisco, and added on the N. the prov. of Parahyba and Rio Grande do Norte to their possessions. The disunion among the Dutch officers appearing to be the principal obstacle to the completion of the conquest of all Brazil, the Company sent, in 1637, Prince John Maurice of Nassau to Pernambuco, with unlimited powers as governor. He soon established a more regular administration, and in the same year got possession of the prov. of Ceará. He next attacked twice (1638 and 1640) the town of Bahia, but as this was the residence of the Portuguese governor, it was better fortified than the other towns, and the attempt failed. The revolution in Portugal (1640) separated that kingdom from Spain, and the new government of Portugal made peace with the Dutch republic. But Nassau did not trouble himself about the orders received from home, and in 1641 and 1642 he took the prov. of Serapipe and Maranhão, so that when he was recalled, in 1643, all Brazil N. of the Rio Francisco, with the exception of Pará, and in addition to this the prov. of Serapipe, was in the hands of the Dutch. The administration of the Dutch colony being left to a council at Recife, every thing soon fell into disorder. The Portuguese governor at Bahia was prevented by the peace, and the orders received from his

government at home, from taking advantage of these circumstances; but a private person, Fernandes Vieira, formed a conspiracy among the settlers of Portuguese origin, in which he was secretly aided by the governor. The conspiracy broke out at Maranhão and Ceará, and extended gradually to the other provinces. At last the Dutch were confined to the town of Pernambuco, from which also they were expelled in 1654, when the Portuguese government sent a naval force to aid the people who had risen against the Dutch. By the peace of 1660 the Dutch renounced their claims on these countries.

At that time the mineral riches of Brazil were not known. The town of S. Paulo had been founded by some Portuguese in 1620, who had ascended to the table-land of the Paraná from the town of S. Vincent, and been induced to settle there on account of its fine climate. The adventurers established a kind of democratic government, and made frequent incursions among the savage nations for the purpose of capturing them and using them as slaves. In these excursions, towards the end of the seventeenth century, they discovered the mines of S. Paulo; and near Sabará, on the Rio das Velhas, in 1700, the richer mines at Villa Rica; and in 1713 those of Marianna. The mines at Cuyabá and Goyaz were discovered between 1715 and 1720. The existence of diamonds in the Rio Içequinhonha was not known before 1728. These discoveries, and the riches which government derived from the mines, induced it to remove the administration of the colony from Bahia to Rio S. Janeiro in 1773.

Brazil has not attained that degree of cultivation and amount of pop. which might have been expected in a colony settled for upwards of 250 years. The principal impediment has been the grants of land being too large, sometimes 100 or 200 sq. m. and more, and the proprietors not having taken pains to settle these extensive tracts with a sufficient number of labourers. Another obstacle has existed in the regulations as to commerce, by which no foreign vessels were permitted to enter the ports of Brazil, nor the Brazilians to send their commodities to any other country than Portugal. This of course caused discontent among the merchants. Further, the natives of Portugal who had emigrated to the colony constituted a privileged class, being exclusively entitled to all posts of honour and all lucrative employments under government, which naturally excited dissatisfaction among the rich descendants of the Portuguese. This dissatisfaction began to generate a wish to change as soon as the U. S. of North America had obtained their independence; and events in Europe took such a turn that Brazil obtained its object almost without bloodshed and war. When Bonaparte had formed his scheme for taking possession of the Peninsula, he began by declaring war against Portugal, upon which the royal family left Europe for Brazil, where they arrived 22nd January, 1808. Considering Brazil as the principal part of his remaining dominions, King John VI. began to improve its condition by placing the administration on a more regular footing and throwing open its ports to all nations. In the meantime the French army, after having occupied Portugal for a time, was driven out of Spain, and though all apprehension of seeing Portugal again conquered by the French was now removed, the royal family did not return to Europe. On the fall of Bonaparte, the king raised Brazil to the rank of a kingdom, and assumed the title of King of Portugal, Algarve, and Brazil. The inh. of Portugal, finding themselves deprived of the advantages of an exclusive commerce with that country, were much discontented, and it was not long that an insurrection, which broke out at Pernambuco in 1817, was excited or promoted by them.

The king was however obliged to return to Europe by the revolution which took place in Portugal in 1820, by which the constitution of Spain had been adopted in the kingdom also. The news of that event had hardly reached Brazil when the same constitution was proclaimed by the inh. in the town of Pernambuco, and soon afterwards in Bahia and Pará. It was feared that similar measures would be taken in Rio Janeiro, and accordingly the king found it expedient to proclaim the constitution himself on the 26th February, 1821, soon after which he sailed for Lisbon, leaving at the head of the administration in Brazil Pedro his eldest son and successor, as lieutenant and regent. The Cortes of Portugal did not conceal their design of restoring the old relations with Brazil, by which its commerce was restricted to the mother country; and they did not treat the

deputies from Brazil quite so well as they should have done. This of course increased the discontent of the Brazilians, and prepared the way for the independence of that country.

The Cortes in Portugal continued their course of policy. They formed a scheme for a new organization of the administration in Brazil and recalled the Prince Regent. But the prince, induced by the representations of the Brazilians, refused to obey their orders, and sent the Portuguese troops stationed at Pernambuco and Rio Janeiro to Europe. The Portuguese commandant of Bahia however did not yield; he expelled the militia and remained master of the town. This step was decisive, and immediately followed by others. On the 13th May the Prince Regent was proclaimed protector and perpetual defender of Brazil. The general Procurators (Procuradores geraes) of the prov. were assembled by the Prince Regent to consult on the new form of government, but they declared that they were not competent to such a task, and proposed the convocation of deputies chosen by the people, to which the prince assented after a short delay. As the Cortes in Portugal still persisted in their design it was thought necessary to declare the independence of Brazil, and the Prince Regent did not venture to oppose the torrent of public opinion. Accordingly on the 12th of October, 1822, Brazil was declared an independent state, and the prince adopted the title of Emperor of Brazil: on the 1st of December he was crowned.

As this step might be considered a declaration of war against Portugal, preparations for hostilities were immediately made. The Portuguese troops still occupied the towns of Bahia, Maranhão, and Pará. Bahia was besieged by the Brazilian forces, and after a few weeks the garrison was obliged to abandon it, upon the appearance of the admiral of Brazil, Lord Cochrane, before the harbour. The admiral also compelled the garrisons of Maranhão and Pará to sail for Europe. Thus the independence of Brazil was established, with no other loss of blood than what took place in the town of Bahia.

The deputies of the prov. met on the 3rd of May, 1823, the anniversary of the discovery of Brazil, and adopted the title of General Assembly of Brazil (Assemblea Geral do Brasil). They appointed a committee for drawing up a constitution, which was done by the 30th of August; but the constitution contained several provisions to which the emperor objected. The meetings of the assembly becoming more and more turbulent, the emperor finally dissolved it on the 12th of November, and called another assembly. In the mean time he caused a new constitution to be drawn up and published, which was afterwards accepted by the new assembly (1824). According to this instrument, Brazil is an hereditary monarchy, limited by a popular assembly. The executive is in the hands of the emperor. The legislative body consists of two assemblies, the senate, and the chamber of deputies. The first is chosen by the emperor, and the second by the people. The Catholic faith is the religion of the state: all other Christians are tolerated, but are not allowed to build churches, and to perform divine service in public.

During these events the Cortes of Portugal had been dissolved, and the constitution abolished. The king, after some slight attempts, being well aware that it was impossible to re-establish the former relations between Portugal and Brazil, acknowledged the independence of the latter country in 1825.

In 1826 two events took place which gave rise to great discontent, the death of King John VI., and the war with Buenos Ayres. By the decease of the king, Portugal devolved on the emperor of Brazil, and the Brazilians again apprehended that they might be placed in a state of dependence on that country. To remove such fears, Pedro declared his daughter Maria queen of Portugal, intending to marry her to his brother Miguel. The subject of the war with Buenos Ayres was the possession of the Banda Oriental, which country had expressed a wish to be united to Brazil, and had been partly occupied by Brazilian troops. But the republic of La Plata maintaining its claims to that country, the war was carried on with some activity and various fortune between 1826 and 1828. By the peace of 1828 the emperor gave up the Banda Oriental and the Seven Missions on the Paraná, both of which were to form independent republics, the former under the name of Uruguay Oriental, and the latter under that of Corrientes.

But the internal peace of the country was not re-esta-

blished. The chamber of deputies had been formed on democratic principles, and they soon found other causes of discontent. Frequent disputes broke out between the emperor and the chamber, and sometimes great disturbances occurred in Rio Janeiro. An affray, which took place on the 13th March, 1831, led to extraordinary results. The chamber of deputies had been prorogued, but twenty-four of the members then residing at Rio remonstrated with the emperor, and demanded the dismissal of the ministers. The emperor assented to this demand, but his next choice fell on persons still more unpopular. This increased the dissatisfaction of the people, and the emperor was required to dismiss the new ministry also, which he refused to do. On the 6th of April a tumultuous populace having assembled before the palace, the emperor ordered the military to disperse them; and on their refusal, he issued a proclamation, by which he abdicated the throne in favour of his son, and on the 7th left Brazil, after having appointed a guardian to his successor, who was under age.

The chamber of deputies now took a more decided lead in public affairs, and appointed a regency of three persons. It was expected, under the circumstances, that Brazil would soon be changed into a republic, but this event has not yet taken place. It would appear that the residence of the royal family in Brazil has attached a great number of the inhabitants to its interests, who strenuously oppose the attempts of the democratic party. It is remarkable, that among the numerous disturbances which have taken place since the departure of Pedro I., some of them have evidently been directed to the destruction or complete overthrow of the democratic party. For the last few years Brazil has enjoyed more tranquillity than the other states of South America. (Ayres de Casal, *Cronographia Brasiliensia*; Travels of Spix and Martius; Eschwege's *Pluto Brasiliensis*; Eschwege's *Gebirgskunde Brasiliens und Brasilien*; Freyreiss, *Beiträge zur Kenntniss Brasiliens*; Schäffer's *Brasilien*; Weech's *Brasilien gegenwärtiger Zustand*; Travels of Mawe, Caldeleugh, and Graham; Southey's *History of Brazil*; and Weiss's *Map of South America*.)

BRAZIL NUTS, the seeds of *BERTHOLLETTIA EXCELSA*.

BRAZIL WOOD. [*CASALPINA*.]

BREACH, an opening formed by the partial demolition of a rampart in order to permit an assault to be made upon the defenders in the interior of a fortified place or work. It is effected either by directing upon the escarp, that is, the exterior surface of the wall, a fire of artillery, or by exploding a quantity of gunpowder which may be deposited in a mine formed for the purpose within the mass of the rampart.

When the attack of a fortress is conducted according to rule and the breach is to be made by artillery, a battery consisting of guns of the greatest calibre is formed on the crest of the glacis; the muzzles of these are depressed so as to permit the firing to be directed against points in a horizontal line on the surface of the revetment, within a few feet of the bottom of the wall; and if the breach is to be made at a salient angle, the battery should encompass the angle so that the guns may be fired at the same time against the two faces of the work. When by successive volleys the shots have pierced quite through the wall, the guns are so directed as to fire at different points in a vertical line passing through each extremity of the horizontal groove, and thus a portion of the wall is detached from the rest; afterwards, a few shot being fired with diminished charges of powder, the detached part will fall into the ditch, leaving an opening, up which, after the surface of the breach has been rendered passable by firing against it till the large masses of the demolished wall are sufficiently reduced, the troops may mount to make the assault.

As it is not always convenient to defer the formation of the breach till after the glacis has been crowned, the breaching batteries are sometimes constructed at an earlier period of the siege, and at a greater distance from the works. It is evident, however, that the firing cannot then be made with so much precision, nor, unless the battery is on commanding ground, or the ditches are very shallow, can the guns be directed to the foot of the escarp wall; consequently the breach will be steeper and more difficult of ascent. In old fortresses however the revetment walls often rise so high as to allow a practicable breach to be formed by a fire directed at a much smaller angle of depression; in these circumstances breaches have sometimes been effected by firing from batteries at the distance of 1200 yards from the walls. Ramparts have also been breached from great distances by

giving the guns a small elevation, and regulating the charges so that the shot may strike the wall obliquely in the descending branch of its trajectory, and thus scrape off, as it were, portions of its thickness: the demolition of the wall is also then facilitated by firing against it shells filled with powder; for these by exploding close to the parts of the wall already shattered by the shot, easily detach from thence considerable fragments and presently cause the ruin of the rampart.

When a breach is to be formed by mining, the fire of the defenders on the ramparts must be kept down by that from the artillery and musketry of the besiegers; and thus protected, a small party of miners is sent across the ditch to the foot of the revetment wall. These men set up several stout planks on end with their upper extremities resting against the wall, and under this cover, which is sufficient to repel the grenades or other missiles sent by the defenders from the parapet above, one of them excavates in the rampart a gallery, which, if near a salient angle, may extend as far as the *capital* of the work: here he forms two or more chambers, which being charged, and a train laid, the mine is fired, when the breach is at once made by the explosion: it may be afterwards rendered passable by firing upon it from a distance as before.

While the breach is being formed by artillery, if the depth of the ditch is considerable, a subterranean gallery is executed, usually from the interior of the battery, or from some of the trenches on the glacis, in an inclined plane descending under the covered way to the back of the counterscarp wall, which is then pierced through to make an opening into the ditch at a point opposite to one extremity of the breach, the earth being kept up on the sides and roof of the gallery by frames and planks according to the usual practice in mining. But when the ditch is too shallow to allow the gallery to have a thickness of earth above it equal to at least three feet, the descent into the ditch is made by a trench, excavated by sapping in an inclined plane descending across the covered way. This trench is covered by a blindage (as described under that word), in order to protect the storming party from the plunging fire of the garrison.

Sir John Jones observes that, in forming breaches by artillery, the guns should fire as quickly as possible and as is consistent with precision; the number of rounds fired per hour is estimated at twenty-five or thirty, but the colonel remarks that such a rate of firing must be injurious to the guns; and as it is not likely to be kept up when opposed by musketry, the average number of rounds per hour for breaching may be considered as twenty during daylight. (*Journals of Sieges in Spain*, 1827, note 29.)

BREAD may be divided into two kinds: first, common biscuit bread, made merely from flour and water, without undergoing any fermentation, and which is consequently compact, heavy, and hard; secondly, loaf bread, formed of flour which has been fermented, and which is therefore porous, light, and soft. The seeds of barley, oats, rye, and wheat are principally employed, and in the state of flour, for the making of bread: these grains resemble each other sufficiently in their nature and properties to render it needless to treat particularly of the bread made from more than one of them; and as wheaten bread is most extensively used, and as in it the properties indicating perfect bread are most distinctly exhibited, our remarks will apply chiefly to it.

Common or unfermented biscuit bread, which was undoubtedly that first used in the early ages of the world, is made from a stiff paste of flour and water, which, after being kneaded, is flattened out, reduced to pieces of the requisite size, punctured with an instrument, sprinkled with flour, and baked. In this operation no chemical change takes place, the operation is the merely mechanical one of moistening the particles of the flour, so as to cause them to adhere in the first instance, and to remain in one mass by the subsequent process of baking.

In bread, properly speaking, the process of manufacture is one of much longer duration, and the chemical action of fermentation is produced in the mixture of flour and water. In order to comprehend what takes place in this case, it will be requisite to state the nature of the different substances which constitute wheat flour; it is composed chiefly of *starch* and *gluten*, with some other substances in smaller proportion: according to Vogel, it is composed of

Starch	68
Gluten	24
Gummy Sugar	5
Vegetable Albumen	1·5

Sir H. Davy states that wheat sown in autumn contains 77 per cent. of starch, and 19 of gluten; while that sown in spring yielded 70 of starch, and 24 of gluten: the wheat of the south of Europe contains a larger proportion of gluten than that of the north, and hence its peculiar fitness for making vermicelli. According to the chemist just quoted, oats yielded 59 of starch, 6 of gluten, and 2 of saccharine matter; while the same quantity of rye gave only 6·1 parts of starch, and half a part of gluten.

The separation of the gluten from the greater part of the starch is very readily effected. Make flour into a thick paste, and work it between the fingers while a slender stream of water is running upon it, and continue the operation till the water ceases to run off milky; then there remains a grey, adhesive, elastic mass, which is principally gluten, but contains some albumen and a little starch: to render it more pure, it is to be treated with boiling alcohol, until the filtered spirit ceases to become turbid on cooling. The alcohol dissolves the gluten, as well as some other substances, the nature of which is imperfectly known, while the vegetable albumen is left. To the alcoholic solution of the gluten add water, and distil the mixture; the alcohol comes over, and there remains a fluid in which the gluten floats in coherent bulky flocks: a small quantity however remains dissolved combined with gum.

The gluten thus procured is of a pale yellow colour, and its smell is peculiar, but tasteless; it is elastic and adhesive; water does not dissolve it, but it is taken up by acetic acid. Exposed to dry air it becomes externally polished, of a deeper yellow colour, and eventually dries into a deep yellow mass, which is translucent, and has the appearance of dried animal matter. When moist gluten is exposed to the air it putrefies, emitting a very disagreeable smell; when decomposed by heat it yields ammonia, and charcoal is left. It is composed of carbon, oxygen, hydrogen, and azote, in proportions which have not been determined: it is owing to the presence of azote that it yields ammonia, and in this respect it resembles animal matter.

These, which are the principal properties of gluten, are sufficient for our present purpose; a more detailed account of them may be seen in Berzelius, *Traité de Chimie*, vol. v. In order to procure the starch of the flour, the water which has been used to wash it in obtaining the gluten is to be suffered to remain at rest; by this, the starch which is merely suspended, may be separated on a filter and afterwards dried.

It is not requisite to give a minute account of the properties of starch; it is sufficient to state that it is colourless, inodorous, insipid; when examined with the assistance of a glass, its particles have a crystalline appearance. It is soluble in cold water, and coagulated by it when boiling; but between about 160° and 180° of Fabr., it is taken up by water, and a clear, colourless solution is formed, which does not deposit starch on cooling. Dry starch suffers scarcely any change even by long exposure to air; but when moist it becomes slowly sour. The peculiar and distinctive property of starch is its giving an intense blue colour, when mixed with a solution of iodine in alcohol.

The difference between common biscuit and loaf bread has already been noticed, and we shall now state the means by which fermentation is induced, so as to give the bread the porous texture and lightness which are the proofs of its perfection.

When flour is made into a paste with water, the mixture is called *dough*, and when this is suffered to remain in a moderately warm place it undergoes that partial and spontaneous decomposition which is called fermentation, and which, in order to distinguish it from other kinds, has been called, but without sufficient reason for the distinction, the *panary* fermentation. During this fermentation a portion of the carbon and oxygen of the partially-decomposed flour recombine so as to form what is sometimes called *fixed air*, but correctly *carbonic acid gas*. This, during its natural tendency to escape into the air, is arrested in its progress through the dough by the adhesiveness of the gluten, and forms, owing to its retention, numerous cavities in it. It is thus that wheat-flour makes lighter bread than that of oats or rye, owing to the larger quantity of gluten which it contains, by which the bread is rendered more porous and lighter, and consequently more digestible.

This plan of fermentation would however not only require much time, but dough thus spontaneously fermented is never quite free from putrescence and acidity, both of which

are injurious to the flavour of the bread: to remedy these inconveniences the process was formerly accelerated by adding to a mass of recent dough, a small quantity of old dough in a state of strong fermentation; this was called leaven, and the mass to which it was added was said to be leavened.

Although the use of leaven was an unquestionable improvement, a still further one was made by the employment of yeast instead of it; by this the fermentation is much more rapidly and perfectly effected. The exact nature of this ferment has not been ascertained; it is the frothy scum which rises on the surface of beer during its fermentation; it is a very compounded substance, and it is by no means determined to what portions of it the fermentive power is particularly owing. It appears to contain gluten, but that alone is not sufficient to account for the effects produced, as it is incapable of fermentation *per se*.

The following statement of the mode in which the baker's operations are conducted is taken from Dr. Colquhoun's essay *On the Art of Baking Bread*, in the 28th vol. of the *Annals of Philosophy*.

When the baker proceeds to the preparation of dough by means of the yeast fermentation, he at first takes, generally a portion only, but sometimes the whole of the water which it is his intention to employ in making the required quantity of dough. In this water, which varies in temperature, according to circumstances, from 90° to 100°, there is dissolved a certain portion of salt, the quantity of which however is always less than that which will finally be required, in order to communicate the necessary flavour to the bread: yeast is now mixed with the water, and then a portion of flour is added, which is always less than the quantity to be ultimately employed in forming the finished dough. The mixture is next covered up and set apart in a warm situation, within an hour after which signs of commencing decomposition make their appearance. The substance thus placed apart is termed, in the language of the bakehouse, the *sponge*; its formation and abandonment to spontaneous decomposition is termed *setting* the sponge; and according to the relation which the amount of water in the sponge bears to the whole quantity to be used in the dough, it is called *quarter*, *half*, or *whole* sponge. The sponge begins to swell out and heave up, evidently in consequence of the generation of some internal elastic fluid, which in this instance is always carbonic acid gas. If the sponge be of a semi-liquid consistence, large air-bubbles soon force their way to its surface, where they break and dissipate in rapid succession. But when the sponge possesses the consistence of thin *dough*, it confines this gaseous substance within it until it dilates equally and progressively to nearly double its original volume, when no longer capable of containing the pent-up air, it bursts and subsides. This process of rising and falling alternately might be actively carried on and frequently repeated during twenty-four hours, but experience has taught the baker to guard against allowing full scope to the energy of the fermentive principle. He generally interferes after the first, or at farthest after the second or third dropping of the sponge; and were he to omit this the bread formed from his dough would invariably prove sour to the taste and to the smell. He therefore at this period adds to the sponge the remaining proportions of flour and water and salt, which may be necessary to form the dough of the required consistence and size, and next incorporates all these materials with the sponge by a long and laborious course of kneading. When this process has been continued until the fermenting and the newly-added flour have been intimately blended together, and until the glutinous particles of the flour are wrought to such a union and consistence that the dough, now tough and elastic, will receive the smart pressure of the hand without adhering to it when withdrawn, the kneading is for awhile suspended. The dough is abandoned to itself for a few hours, during which time it continues in a state of active fermentation now diffused through its whole extent. After the lapse of this time it is subjected to a second but much less laborious kneading, the object of which is to distribute the gas engendered within it as equally as possible throughout its entire constitution, so that no part of the dough may form a sod or ill-raised bread, from the deficiency of this carbonic acid gas on the one hand; or a too vesicular or spongy bread, from its excess on the other.

After the second kneading the dough is weighed out into the portions requisite to form the kinds of bread desired:

these portions of dough are shaped into loaves, and once more set aside for an hour or two in a warm situation. The continuance of fermentation soon generates a sufficient quantity of fresh carbonic acid gas within them to expand each mass to about double its former volume. They are now considered fit for the fire, and are finally baked into loaves, which, when they quit the oven have attained a size nearly twice as bulky as that at which they entered it. It should be remarked, that the generation of the due quantity of elastic fluid within the dough has been found absolutely necessary to be complete before placing it in the oven, because as soon as the dough is there introduced, the process of fermentation is checked, and it is only the previously contained air, which, expanded by heat throughout all the parts of the entire system of each loaf, swells out its whole volume, and gives it the piled and vesicular structure. When it is recollected that the gas thus generally expanded has been previously distributed by the baker throughout the bread, and that the whole dough has been by kneading formed of a tough consistence, the result becomes apparent, that the well-baked loaf is composed of an infinite number of cellules, each of which is filled with carbonic acid gas, and seems lined with or composed of a glutinous membrane, and it is this which communicates the light elastic porous texture to the bread.

It has been already observed that what is sometimes called the *panary fermentation* is not of a peculiar kind: it is the mere vinous fermentation; and it has been shown by Dr. Colquhoun, that during the fermentation of bread alcohol is one of the products as well as carbonic acid: this has also been most satisfactorily proved by Mr. Graham. (*Ann. Philosophy*, vol. 28, p. 367.)

To avoid the use of yeast, which might introduce alcohol, Mr. Graham kneaded a small quantity of flour, and it was allowed to ferment in the usual way, to serve as leaven. By means of the leaven a considerable quantity of flour was fermented, and when the fermentation had arrived at its proper point, formed into a loaf. The loaf was carefully enclosed in a distillatory apparatus, and subjected for a considerable time to the baking temperature. Upon examining the condensed liquid, the taste and smell of alcohol were quite perceptible, and by repeatedly rectifying it a small quantity of alcohol was obtained of strength sufficient to burn and ignite gunpowder by its combustion. Alcohol of this strength was obtained in quantity varying in weight from 0.3 to 1 per cent. of the flour employed: when the fermented flour was allowed to sour before baking, the amount of alcohol rapidly diminished, and the disagreeable empyreuma consequent upon this completely disguised the peculiar smell of the alcohol when in its first dilated state and in vapour.

We have now stated sufficient facts to prove that the fermentation which occurs in the preparation of bread is merely the vinous, and Dr. Colquhoun has shown that it depends upon the saccharine ingredient of the flour, though its quantity compared with the others is so small: this was done by renewing the fermentation by the addition of sugar when it had been exhausted. The fermentation is also probably aided by the conversion of a portion of starch into sugar, as happens in the well-known process of malting.

The nature of the yeast employed in bread-making is a subject of considerable importance: porter yeast is too bitter, but ale and table-beer yeast answer perfectly well. When these are deficient in quantity yeast is manufactured by a process similar to that of brewing; a wort is made of malt, to which hops and brewers' yeast are added; by this yeast is obtained free from the bitterness which accompanies porter yeast.

Carbonate of ammonia is advantageously and extensively used as a substitute for yeast in making the finer kinds of bread: it is a substance which is totally volatilized at a moderate temperature, and though extremely pungent to the smell and possessed of a strong taste, it imparts neither to the bread on account of its great volatility.

Salt is used in bread-making, not only for the sake of flavour and colour, but also to stiffen the clammy dough made from new flour. Good flour will bear a greater quantity of salt than bad, and new flour requires more than old, for the reason already stated.

When flour is converted into bread, it is found on weighing it when taken from the oven that it has increased from 28 to 34 per cent. in weight; but when it has been kept thirty-six hours, that which had gained twenty-eight will lose

about four pounds. There are however several circumstances which influence the quantity of bread obtained from a given weight of flour, such as the season in which the wheat was grown, and the age of the flour: the better the flour is, and the older, within certain limits, the larger is the quantity of the bread produced.

If it were requisite, a long list might be produced of articles which have been proved or have been said to be mixed with bread so as to adulterate it. No advantage would, we think, arise from such statement. The most innocent of them is potatoes.

BREAD-FRUIT. [ARTOCARPUS.]

BREADALBANE. [PERTSHIRE.]

BREAKWATER. [PLYMOUTH.]

BREAM, a fish well known to anglers, and by them often called the carp-bream, from its resemblance to the carp, in being of a golden-yellow colour.

As there is another closely-allied species of bream, it would be well if the latter name were universally adopted. The Spanish bream, sea-bream, &c. belong to quite a different class of fishes [PAGELLERS, CANTHARUS, and BRAMA]. The carp-bream and the white bream are included in the genus *Abramis*, and belong to the Cyprinidae, a family of the abdominal Malacopterygii. The chief distinguishing characters of the genus *Abramis* consist in the deep and compressed form of the body, the want of barbules to the mouth, the short dorsal fins, which are placed behind the ventrals, and the long anal fin. *Abramis brama* (the *carp-bream*) is tolerably abundant in the lakes and slow-running rivers of most parts of Europe, and is very prolific. It may be distinguished from allied fresh-water fish by its yellow colour and the deep compressed form of its body; its pectoral and ventral fins are tinged with red. The weight of this fish is commonly about two pounds, but specimens have been caught weighing from eight to twelve pounds. *Brama blicea* (the *white bream*, or *bream flat*), the only other species known, has lately been discovered in the river Cam in Cambridgeshire and other rivers of this country. It is a smaller fish than the one just described (seldom if ever exceeding one pound in weight), and is of a silvery or bluish-white hue. Its scales are larger in proportion, and likewise its eyes: the number of rays of some of the fins also differs from those of the carp-bream. For more detailed accounts of these fishes we refer to Yarrell's 'History of British Fishes.'

BREAST-PLATE. [ARMOUR.]

BREAST-WORK is a mass of earth raised above the natural ground for the purpose of protecting troops against the fire of an enemy, its height being only such as will permit the protected party to fire over it when mounted on a banquette or step. When the work has its surfaces carefully formed and reveted or covered with sods, particularly when it is elevated on the rampart of a fortress, or constitutes a considerable field fort, it is always denominated a parapet—the word *breast-work* being chiefly applied to a rudely-formed mass of earth thrown up to cover the troops stationed on any exposed part of a field of battle, or doing duty as an outpost of the army; or to the *gabionnade*, that is, the row of gabions placed on end and filled with earth, which the sappers construct for the protection of the troops in the trenches, or on the breach which is made in a rampart. A breast-work however differs from an epaulement, which is also a mass of earth or other material raised to cover troops or artillery when in situations exposed to the fire of the enemy, in being provided with a banquette as mentioned above.

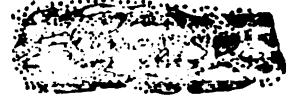
The intrenchments with which the Greeks and Romans protected the ground occupied by their armies were breast-works, which in wooded countries frequently consisted merely of felled trees; and in other circumstances were formed of earth protected by palisades, or by the interwoven branches of trees planted on the top of the bank of earth. The same denomination might be applied to the continuous lines which were formerly raised for the protection of armies; but as these are not now recommended by engineers, and as instead of them a number of separate redoubts are usually formed at intervals from each other to contain artillery, the word breast-work is little used, the protecting masses of earth generally receiving the name which is given to those which crown the ramparts of a permanent fortification.

BREATHING. [RESPIRATION.]

BREATHING-PORES, microscopic apertures in the cuticle of plants, through which the functions of respiration and evaporation are supposed to be carried on. They are formed by the juxtaposition of two cells which do not adhere when

they touch, but which have a power of contraction so as to leave an opening between them which acts as an escape-valve to the air-chambers immediately below them. [STOMATA.]

BRECCIA, an Italian word, literally signifying an opening or breaking in any substance, is employed in geology to designate a rock composed of angular fragments of a pre-existing rock, or of several pre-existing rocks, united by a cement of mineral matter that may vary from compact to friable. Thus, as in the annexed diagram, the fragments



(which are shaded) may be composed either of angular portions of quartz rock, or any other single rock, united by a cement (which is dotted) formed of the hard siliceous substance named chert, or any other hard mineral substance, or the fragments may be angular portions of many rocks, such as a mixture of pieces of slate, porphyries, limestones, granites, or others, united by a friable sandstone or any other soft mineral substance.

The name of Breccia is derived from the well-known Breccia marble, which has the appearance of being composed of fragments joined together by carbonate of lime, infiltrated among such fragments after the latter were produced by some disrupting force.

Breccias inform the geologist that the pre-existing portions of rocks, included in them, have not been exposed to considerable friction, which would have rounded off the angular parts, as has happened in the case of pre-existing pieces of rocks included in conglomerates [CONGLOMERATA]. Hence the geologist may expect to find the rocks, of which the angular fragments of a breccia are derived, not far distant from the breccia itself, while the rounded pebbles contained in a conglomerate may have been transported from considerable distances.

BRECHIN, a par. and royal burgh in Forfarshire, Scotland, bounded on the E. by the par. of Dun, W. by Cairniston, N. by Strickathrow and Menmuir, S. by Farnell and S.W. by Aberlemno; and situated on the N. bank of the South Esk, $7\frac{1}{2}$ m. W. of its junction with the sea at Montrose, $12\frac{1}{2}$ N.E. of Forfar, $26\frac{1}{2}$ N.N.E. of Dundee, and $39\frac{1}{2}$ S.W. of Aberdeen. The par. is about 7 m. from E. to W. and 6 broad from N. to S.; and contains $24\frac{1}{2}$ sq. m.

Brechin was formerly a walled town and a bishop's see. The bishopric was formed about 1150 by David I. In 1500 its revenue was—money, 410*l.* Scots; capons, $11\frac{1}{2}$ doz.; geese, 16 doz. and 10; geese, 18; corn for horses, 1 chalders; 2 bolls; salmon, 3 barrels; money by kinds, $241\frac{1}{2}$ *sc.* (Scotch); teind wheat, 41 bolls; bear, 14 chalders, 6 bolls; meal, 26 chalders, 5 bolls. There are in the upper part of the town ruins of the ancient chapel of *Maison Dieu*, which are now used as a stable. In the churchyard near the cathedral there is one of those curious round towers which puzzled antiquarians to settle by whom they were built, and for what purpose they were constructed. Several exist in Ireland; only one other exists in this island. This tower is about 108 ft. high, and is constructed of hewn stone; its workmanship is admirable. It is surmounted with a conical roof of gray slate; and there is no appearance of there ever having been any staircase within it. There is a full description of the tower in Gordon's 'Iter Septentrionale.' The measurements there are correctly given; but the statement as to the spiral courses of masonry is incorrect. The cathedral, the W. end of which is now the par. church, was built by David I. in the eleventh century. Brechin Castle stands on the top of a precipice, and is separated from the town on the E. and W. by a deep ravine; its S. base is washed by the South Esk, which here forms a fine stream of water. In this castle Sir Thomas Maule defied the force of Edward III. until he was killed by a stone thrown by an engine, when the garrison surrendered to the English.

The town-house, near the cross or market-place in the middle of the town, was almost entirely rebuilt about thirty years ago: it contains a court-room and prison, two rooms for the meetings of council, and a guild-hall. Three schools, built by subscription several years ago, adorn the W. end of the town. Towards the N. end there is a Scotch Episcopal chapel, built about twenty years ago, and enlarged and beautified in 1832, especially at the W. end, which is neatly finished with two minarets on each side of

On cross in the centre. There are four plain and octagonal Presbyterian meeting-houses; one of which was built lately next to an English Episcopal chapel, one belongs to the Antislavery, one to the Relief, and two to the Wesleyan-Methodists. A handsome new church, or chapel of ease to the establishment, is now (1836) building.

In 1821 the number of houses in the burgh and parishes amounted 999, building 9, and unoccupied 32; the total number of families was 1875, of whom there were employed, chiefly in agriculture, 308; in trade, manufactures, and handicrafts, 1630; other families, 317; the total number of persons was 6505; males, 3644; females, 2861. At present upwards of 400 persons are employed in the linen trade. The number of female persons was 34; blind, 10; and deaf and dumb, 3. About 900 families attend the Established, and 309 the Dissenting and Episcopalian churches. The total rent of the par. is about 15000*l.*, the average rent of land is about 27*s.*, and bond as grass for the season from 25*s.* to 40*s.* per imperial acre. There are about 30 men and women employed in hawking, 900 in spinning, from 1000 to 1800 in weaving, and from 20 to 25 in bleaching. Two spirit distilleries are carried on near the town. There are three ironworks and several freestone quarries, besides three nurseries, consisting of about 25 imperial acres of land, which supply a large district with ornamental shrubs, bushes, fruit and forest trees, &c.

The burgh is governed by the town council, which since 1820 has consisted of thirteen members chosen by the 10*l.* householders within the burgh. One of the eleven is elected dean of guild annually by the guildry. The council choose the magistrates, a provost, two bailies, a treasurer, and a master of the hospital. The property, except the town-houses and school-house of Brechin, in 1832, was valued at 11,335*l.* It consists of lands, houses, mills, growing wood, ten farms, a left in the church, and shares in 50 tenements. The town-houses and school-house may be worth about 200*l.* The total annual revenues of the burgh in 1811 *sc.* 34*l.* The ordinary expenditure in 1832 was 2097*sc.* 114*l.*; the extraordinary in improving streets and roads, 330*l.* 4*s.* 5*d.*; the over expenditure of that year, 1247*sc.* 6*s.* 2*d.* At the same time the town's debts were 3287*sc.* 10*s.* 0*d.* Within the last forty years the value of the property is nearly doubled, the income and outlay are nearly doubled, and the debt has increased fivefold. The magistrates exercise their jurisdiction within the royal boundaries, which are not so wide as the parliamentary. A halloo court is held every Wednesday, except two short vacations, in which there have been brought, from 1820 to 1834,

- 659 Civil Causes (proper),
- 436 Homings,
- 33 Building Warrants, since 1827.
- 14 Criminal Causes.

1163

The town-clerk acts as assessor to the halloo court. There is an appeal from the halloo court, where only one magistrate sits, to the other magistrates. The magistrates and council elect the civil officers of the burgh. The six incorporated trades, except the weavers, possess the exclusive privilege of receiving an apprenticeship in the burgh. Brechin, in comparison with Montrose, Arbroath, Forfar, and Inverurie, returns one member to parliament; the number of constituents amounts to for Brechin, 231; for the district, in 1835, 30,720.

The par. church, in the centre of the town is in excellent repair, and contains 1000 sittings. The charges in collegiate. The first minister has a house built from the funds of the Free-church more than fifty years ago, and about an acre of garden ground. His stipend is 19 shillings of grain, 3*s.* 6*d.* of wool, and the rest half barley and half oatmeal, besides 10*l.* for maintenance elements. The second minister has a house, 4 gals of 6 sows of good ground, 17 shillings of grain, 2*l.* from bishops' rents, and 10*l.* for communion elements. When converted into money the stipend of each is about from 250*l.* to 300*l.* a year.

In 1823 the arrangement of the schools was revised. The rectar of the academy and presbytery of Nassau Den had a school of 50*l.* per annum; 10*l.* per annum for a house, and 10*l.* as session-charge, making in all 80*l.*, besides five other scholars. The parochial teacher has a salary of 20*l.* and the third teacher of 50*l.* per annum, besides 10*l.* In 1823 the rate of poor, annual for was, per quarter, reading

2*s.* 6*d.*; writing, 2*s.*; reading and writing, 2*s.* 6*d.*; arithmetic, 2*s.* 6*d.*; French, 2*s.*; Latin, 2*s.*; and geography, in addition to any of these branches, 1*s.* The average number of pupils was 112. Greek and mathematics were occasionally taught. There were in 1823 eleven private schools in the par., one of them patronized by Dissenters; the average number of scholars in each about 40; they teach reading, writing, and arithmetic.

Lectures in Quarter from Sheriffs on Parochial Education in Scotland, 1824; Annals and Abstract of Papers from the Board of General Management, 1831; Boundary Reports; New Statistical Account of Scotland; Playfair's Description of Scotland; Chambers's Gazetteer; South Municipal Corporation Reports.

BRECKNOCK or BRUON, the capital town of Brecknockshire, called by the Welsh Aber Honddu, the mouth of the Honddu, in lat. 51° 54' N., long. 9° 12' W., 167 *sc.* W.N.W. of London, near the centre of the est. in an open valley at the confluence of the riv. Usk and Honddu. It is a corporate town, and returns one member to parliament. The limits of the bor., which are not set out in any existing charter, seem to be well ascertained; they are extremely irregular, reaching in a W.N.W. direction about 2 *sc.* from the castle; towards the W. of the same building, their extent does not exceed a square of a mile. Part of the par. of Llywell, called Trewasde Ward, on the left bank of the Usk, on the high road from Brecknock to Caermerthen, belongs to the bor. of Brecon, and is subject to the jurisdiction of the corporation. Excepting Trewasde Ward, the whole bor. lies in the par. of St. John the Evangelist and St. David in Llanfyllis. Each of these par. is divided into an upper and lower division. Of St. David's, the lower division is wholly within the bor., and the upper wholly without it; and of St. John's, a great part of the upper division of the par. is without the bor.; while all the lower portion, commonly called the chapelry of St. Mary's, is within its limits. Two portions of the space comprehended within the last line, the castle and Christ's College, are extra-parochial. Under the Boundary Act, they form a part of the parliamentary, but not of the municipal bor. Two courts are held in the week for the trial of small debts and actions. The expense of trial in these courts is sometimes less than forty shillings, if the action is undefended; and from four to five pounds, if it is defended. It takes about three weeks to obtain judgment. There is a small bor. court maintained by a hire, rate, which is used for debtors only, an arrangement having been made with the co. to send other prisoners to the goal, which is also in Brecknock. The income of the corporation, in 1833, was under 250*l.*

The castle was built A.D. 1094, by Bernard Newmarch, a relative of William the Conqueror, who wrested the co. from the hands of the Welsh princes, and here fortified himself, that he might the better maintain the rights which had been granted to him as Lord of Brecon, against the continual attempts of the British to expel him. It was considerably increased and improved by the last Humphrey de Bohun, Earl of Hereford, high constable of England and governor of Brecknock. Part of several towers, including that called Ely Tower, in which Marston was confined [BACCKNOCKEMIA], are still standing. The situation is commanding for the purposes of early warfare: the main part of the fortifications may still be traced. It appears from a manuscript in the British Museum, that the Castle of Brecknock and the walls of the town were destroyed by the inh. during the civil wars, to avoid the expense of a garrison and the miseries of a siege. Two priories, the one Benedictine and the other Dominican, were also founded by Bernard Newmarch, in the reign of Henry I. The first is now the par. church of St. John's, called the Priory Church; the second was converted into a college by Henry VIII. The Priory Church stands in the N. part of the town, adjoining the present of the priory, where there is a beautiful promenade by the side of the riv. Honddu. The architecture of the church is not so ancient as the tradition itself. It contains some fine early English windows, and is built in the form of a cross, from the centre of which rises an embattled tower. A paved cloister extends from the church to the refectory. This is the principal church in Brecknock; it is frequented by the inh. of the upper part of the par. of St. John's; the chapel of St. Mary, a building of no remarkable beauty or antiquity, is the established place of worship for the lower division. The Dominican convent, now the college, is situated near Llanfyllis

church, on the W. side of the Usk. This establishment is now of little use: it formerly was a place of education for the Welsh clergy, but has ceased to be so since the foundation of Llampeter College. Part of the building has been converted into a grammar school and dwelling house. The school is attended by less than ten children, and the building is very much out of repair. Service is performed to a small congregation in the chapel on Sunday evenings. The endowment is very small. The par. church of Llanfaes or St. David's is an early English building, of no particular beauty, situated near the Trecastle road, on the W. side of the Usk.

The town is built in a healthy and extremely picturesque situation: it contains no very remarkable buildings. There was formerly a wall fortified with ten turrets, and through which there were five gates, called the Castle Gate, Street Gate, Watton Gate, Water Gate, and Bridge Gate: these do not now exist. The principal streets are the Bulwark, the Struet, High Street, Watton, and Wheat Street. There are three bridges over the Honddu, and one over the Usk. The town-hall stands near the centre of the town: the building is old and inadequate for its purposes; and a bill is now before parliament for the erection of a new one. The barracks are situated in the Watton, the entrance from Crickhowell. Detachments of infantry and artillery are quartered here, to be at hand in case of any disturbances among the collieries and iron-works. Nearly adjoining the barracks an infirmary has been lately built, which is relieving fifty in and out-patients. There are three banks in Brecknock, one belonging to a joint-stock company; the others to private individuals. The town has a tendency to increase at the principal outlets; houses are now building in those which lead to Hay and to Crickhowell. Fairs are held five times in the year,—in March, May, July, September, and November: the market-days are Wednesday and Saturday; these are well supplied with corn, cattle, eggs, and poultry, of which an abundance is reared by the neighbouring farmers and cottagers. The town is lighted with gas, and is well supplied with coal, brought along the can. at a very moderate price. A small quantity of flannel and coarse woollen cloths are manufactured in the town; hats also are made here of a middling quality. The exertions of the Brecknockshire Agricultural Society to establish a linen factory have been wholly unsuccessful.

The pop. of the bor. of Brecon was, according to the last census, males, 2324; females, 2702; total, 5026.

The entire par. of Llanfaes then contained 1321, and the par. of St. John's 3867 inh., including in each the portions which are without the bor. The census states the bor. of Brecon to have contained, in 1831, 1071 inhabited houses; 1149 families; 92 employed in agriculture; 609 in trade and manufactures; 448 others. The commissioners of corporation inquiry who were in Brecon in 1834, estimated the number of 107 houses within the bor. at about 340; only 156 were returned in the inhabited house assessments. The number of voters registered, in 1834, was 242.

The Lancasterian schools, both for boys and girls, are well attended. The school of the Boughrood charity contains about forty children: these, since the decline of the College school, have been the principal places of education in the town. There is no mechanics' institute or other similar establishment. The poor's-rate does not appear to have varied much in the last few years; it has not increased, if any judgment can be formed from the accounts, which have not been made up in a very accurate way. The amount of the assessed taxes collected in the bor. of Brecon was, in 1834, 1195*l.*; in 1835, 989*l.* (*Communication from Brecknockshire.*)

BRECKNOCKSHIRE, an inland co. of S. Wales, bounded on the N. by Cardiganshire and Radnorshire, from which latter co. it is for the most part separated by the riv. Claerwen, Elan, and Wye; on the W. by Cardiganshire and Caermarthenshire; on the S. by Glamorganshire and Monmouthshire; and on the E. by Monmouthshire and Herefordshire. This co. extends from N. to S. 35 m., and from E. to W. about 30 m. Its area is near 754 sq. m. The pop., in 1831, amounted to 47,763: thus Brecknockshire ranks the third among the S. Welsh co. in extent of surface, and fifth in amount of pop. It was antiently called Garthmadrin, or the Fox-hold, and derives its present name from Brychan, a Welsh prince, who lived in the fifth century.

The surface of this co. is extremely irregular, the valleys deep, and the mountains the highest in S. Wales. It is intersected on the N. and S. by two long ranges of moun-

tains: that on the N. goes by the general name of Epynt, an obsolete British word for a hill; the other range, beginning with the Caermarthen Beacons, runs nearly parallel to the Epynt hills, and inclining more towards the S., terminates in Monmouthshire. Between these two chains a third rises abruptly near Talgarth, which is called the Black Mountain. Another line also branches across in a direction from N. to S., about eight m. below Brecknock, dividing the hund. of Devynnock from those of Talgarth and Perykelly. The highest mountains in Brecknockshire are, the Brecknock Beacons, about three m. S.W. of Brecknock, which are 2862 ft. above the level of the sea; Capellant, which is 2394; Cradle Mountain, 2545; and Dwggan near Builth, which is 2071 ft. high. The principal rivers are the Wye; the Usk, which rises in the Caermarthenshire Par., about five m. from Trecastle; the Honddu, which rises in Drum-dhu, and falls into the Usk at Brecknock; the Yrfon, which rises in Bryn-garw, in the N.W. boundary of the co., and falls into the Wye about a mile above Builth; the Elan, the Claerwen, and the Tawe. The Tarell also, a small riv., rising in Bryn-du, joins the Usk a little above Brecknock, and the Taf Fechan (small), and Taf Fawr (large), which rise in different parts of the S. declivity of the Brecknock Beacons, unite into a considerable stream, the Taf, at the S. boundary of the co. near Cyfarthfa Park. None of these streams are navigable. To facilitate the conveyance of goods from Brecknock to Newport, a canal capable of conveying boats of twenty-four tons, was finished in 1811; a railroad was soon after made from Brecknock to Hay, and from thence to Kington and the lime rocks near Old Radnor. The Swansea can. enters for a short distance the S.W. part of the co. The mountains Mynydd Llangynidr, Mynydd Pen Cym, near the Clydach, at the S. boundary of Brecknockshire and Monmouthshire are intersected with many railroads, which communicate with the various collieries and iron-works. Two branches descend into the vale of Usk, so as to connect with the Crickhowell can. the one near Tal-y-bont, the other near Llangattock. There is also a long line of railroad, which begins near the limestone on the Brecknock and Trecastle road, and passes up a valley of Forest Fawr to the E. of the riv. Tawe: nearly parallel to it, communicates with Drim Colliery, and finally with the Swansea can. About five m. E.S.E. of Brecknock is situated Llyn-Safaddu or Llangorse Park, a sheet of water two m. long, and in some places one m. breadth. It abounds in fish, and in winter is much frequented by wild fowl. In 1235 permission was granted to the monks of Brecknock to fish in this lake three days a week, and every day in Lent, provided they only used one boat. The scenery in this co. is extremely beautiful. The extensive views from the mountains, the abrupt outlines of the Brecknock Beacons, the undulating surface, frequently clothed with woods and intersected by torrents, from their expanse, their variety, and their wildness, are very striking to the admirers of the picturesque.

The principal roads are from Trecastle, through Brecknock to Crickhowell, which is travelled by the Caermarthen and London mail, that from Brecon to Hay, on which a considerable improvement is contemplated within two miles of the former place; also the roads from Brecon to Merthyr and from Builth to Hay. These as well as the less important thoroughfares through the co. have in late years been greatly improved. A new line of communication of great public utility has been opened between Talgarth and Crickhowell: it is well engineered throughout the whole of the mountainous district. A similar undertaking between Brecon and Builth has been suggested, and would be a great accommodation to travellers as well as the neighbouring residents. The turnpike trusts in this co. maintain 169 m. of road; their income, in 1833, was 3559*l.*

The climate varies considerably, according to the elevation and exposure. In the neighbourhood of the Brecon Beacons, the Black Mountains, and the elevated districts between Trecastle and Builth, the wind, the snow, the cold, and continual rains, are often severely felt, by which the crops are injured, and the harvests retarded; the lower valleys are comparatively warm. The country is subject to much rain, but the air, on the whole, bracing, and the pop. healthy: upon an average of ten years from 1821 to 1831, the annual deaths were 1 in 66.4,—a calculation which places Brecknockshire among the most healthy co. of England and Wales.

The geology of this dist. has lately occupied the attention of that able and industrious geologist, Mr. Murchison, late

president of the Geological Society. The oldest rocks which occupy the W. of Brecknockshire consist of greywacke slates; a remarkable line of trap and porphyry breaks through the rocks of this age, extending from Llanwrtyd for about four m. to the N.N.E. Between these old rocks and the escarpment of Mynydd Epynt and Mynydd Bwch y Groes, the transition rocks are displayed; the uppermost consisting of that which Mr. Murchison has recently described as the Ludlow rock, which there passes up into the old red sandstone. These transition rocks, which in Shropshire and Radnorshire contain thick masses of lime, are throughout the whole of their range in Brecknockshire remarkably void of limestones. The great mass of the co., especially the central and S.E. dist., consist of the old red sandstone, which has been shown by Mr. Murchison to be divisible into three sub-formations:—1. A lower zone of tile-stones, remarkably exhibited along the rectilinear escarpment of Mynydd Bwch y Groes, extending into Caermarthenshire. 2. A central portion of marls, concretionary limestones (locally called cornstones), sandstones, &c. 3. The upper portion of sandstone and conglomerate; this upper portion, occupying the summits of the Fana of Brecon, and other lofty mountains, between Brecknock and Abergavenny, is by its inclination carried under the whole of the great productive S. Welsh coal-field. We thus see that the whole of the district to the N.W. of this tract of country lies beneath the carboniferous series.

The mineral springs at Builth and at Llanwrtyd rise in the silicified and hardened schists, at points where they are penetrated by trap-rocks. Their origin is considered to be due to the decomposition of the vast quantities of sulphuret of iron which are collected at such points. With the exception of the strata containing iron and coal, which, though for the most part in Monmouthshire [MONMOUTH], in some places cross the boundary of Brecknockshire, there are no mines or minerals in this co. worthy of notice. Some small traces of copper ore have been found in the old red sandstones, which upon trial have proved to be unprofitable.

One of the most remarkable features in the geology of Brecknockshire is a penin. of transition rocks, which is thrown up from N.E. to S.W., ranging from Erwood on the Wye to the rocky promontory of Corn y Fan, five m. N. of Brecon.

The soil in the hund. of Talgarth and Crickhowell is more favourable to cultivation than any other part of this co. Wheat is here grown in considerable quantities; and there are orchards, from which good cider is frequently manufactured. In the hund. of Devynnock, and perhaps more so in that of Builth, where there is much cold, wet clay, barley and oats are the grain crops chiefly cultivated by the farmers. Agriculture throughout the co. has considerably improved during the last fifty years: partly through the exertions of an Agricultural Society, one of the earliest in the isl., which was established in 1755, by Mr. Powell of Castle Madoc. Better implements are used, more manure put upon the land, cropping better understood, husbandry more skilful, turnips more generally cultivated, and the farming stock is of better quality. In the high lands are bred small black and brindled cattle, horses (which throughout the co. are of rather an inferior sort), ponies, and good hill sheep, whose wool, though finer than that of the neighbouring co., is not so suitable to the manufacture of flannel. In the low lands the Herefordshire breed of cattle predominates, and is on the increase. The ewes are brought down from the hills in winter, and are not taken back until the cold weather has ceased and the lambs are strong enough to bear exposure. The farms vary much in value and in size: they are seldom let upon lease, and are chiefly held at a yearly tenure, at rents from 20*l.* to 100*l.* a year.

Brecknockshire is divided into six hund. exclusive of the bor. of Brecknock. These are Builth, Crickhowell, Devynnock, Merthyr, Penkelly, and Talgarth. It contains sixty-six par. with seventy-three churches and chapels. The m. t. are Brecknock, the only corporate town within the co., Crickhowell, which stands upon the rich banks of the Usk, and Builth, and Hay, which occupy two picturesque situations on the Wye. Among the principal vil. may be named Talgarth, Treacastle, Llangattock, Llyswen, and Llangyndir; and among the chief hamlets Bronllys, Llywel, Crickadarn, Devynnock, and Llangorse. The benefices are usually very small; a large proportion are under the value of 100*l.* per annum; and very few exceed 200*l.* Among the few that are considerable are the united vic. of Crick-

adarn and Llan-de-fally, the income of which is about 686*l.*, the rec. of Llangattock 1123*l.*, and Llanvigan 480*l.* a year.

The manufactures of this dist. are few and unimportant. Flannel and other woollen goods, such as baize and coarse checks for trousers, are woven in several small factories. Some hats of middling quality are also made in the bor. of Brecknock. The knitting of stockings, which was formerly practised to a great extent by the women of the country, is now less frequent. Woven stockings, though less durable, are so much cheaper as to have greatly diminished this branch of industry.

The co. of Brecknock contained, in 1831, 9848 families, of which 3959 were employed in agriculture, and 2954 in handicraft, trade, and manufactures. The number of males above twenty years of age was then 12,220: about 80 of these are employed in weaving woollen yarn, the produce of domestic industry; and in the S. part of the co. 470 men are employed in the iron-works, of whom 126 are at Llanelly, 110 at Penderyn, and 234 at Faenor, places near Merthyr Tidvil. The pop of the co. is thus distributed:—

Hundreds.	Males.	Females.	Inhabitants.
Builth . . .	3,277	3,422	6,699
Crickhowell . . .	5,924	5,252	11,176
Devynnock . . .	4,330	4,279	8,609
Merthyr . . .	1,658	1,637	3,295
Penkelly . . .	2,609	2,648	5,257
Talgarth . . .	3,774	3,927	7,701
<hr/> Borough of Brecknock	<hr/> 2,324	<hr/> 2,702	<hr/> 5,026
Total . . .	23,896	23,867	47,763

The number of occupiers of land is stated at 2405, of whom 1249 are employers of labourers. It is remarkable that in the pop. returns of this as well as in some of the adjoining co. no one is enumerated as following the trade of a pawnbroker.

This co. is wholly in the diocese of St. David's and prov. of Canterbury. In its 66 pars. there are 23 recs., 16 vics., and the remainder perpetual curacies. The assizes are held at Brecknock, by the judge attending the S. Welsh circuit. Brecknockshire returns one member to parliament. The number of co. voters registered in 1834 was 1668. Brecknock is the only polling place.

Brecknockshire remained in the power of the Welsh princes until 1092. It was in this year that Barnard Newmarch, a relation, and, according to some accounts, the brother of William the Conqueror, made himself master of Brecknock, where he established himself with a number of his retainers. The lordship of Brecknock was granted to him by the king, and that he might obtain possession of his rights and the better defend himself against the natives; whose hostility and resistance to his authority made it difficult for him to maintain his position in the country, he built the castle of Brecknock, as a stronghold for himself and for his troops. Notwithstanding the vigorous efforts of the Welsh to drive him from the country, he succeeded in his conquest, and at his death the lordship of Brecknock was inherited by his son-in-law, Milo Fitz Walter, Earl of Hereford. This earl was succeeded by four of his sons, in turn, and afterwards by Philip de Breos, their brother-in-law, who died about 1160 A.D. He was followed by his son William de Breos, to whom the lordship was confirmed by King John in 1194. This spendthrift defrauded his son, upon whom he had settled his inheritance, mortgaged it three times over, cheated his creditors, and at last sold it to three different persons at the same time, not one of whom obtained possession, though all paid the purchase-money. He was for some time in enmity with King John, was attainted, and the lordships of Talgarth and Blánllyfni were given to the king's favourite Peter Fitzherbert. William was succeeded by Roger, and afterwards by Giles de Breos, Bishop of Hereford; and the lordship then passed into the hands of Reginald de Breos, who upon the death of his first wife married Gwladis, daughter of Llewelyn Prince of N. Wales. No sooner had he done homage and sworn fealty to the king, than he engaged in a confederacy with Llewelyn and the English barons in resisting the power of his sovereign, who in 1216, the last year of his life, gratified his revenge against his revolted subjects, by marching into Wales, and burning the castles of Hay and Radnor. Upon the accession of Henry III., Reginald was induced by the restoration of some escheated property to forsake his father-in-law and his adherents. Llewelyn, incensed at

this breach of faith, laid siege to Brecknock, which was however spared at the earnest intercession of the burghesses. Reginald and Llewelyn were afterwards reconciled, upon which the king re-transferred some of the property of the former to Fitzherbert. Reginald died in 1229, and was buried in the Priory church at Brecknock. His inheritance passed to William, his eldest son by his first wife. War still raged in the marches, and the king heading his troops, exerted himself vigorously to conquer the Principality; while Llewelyn strained every nerve to maintain his independence. William de Breos was made prisoner by the Welsh; and though the whole territory of Builth was offered for his ransom, it was refused. Henry, harassed by the irregular warfare of the Welsh, relinquished his unsuccessful enterprise, and made a disadvantageous peace with Llewelyn. He omitted to stipulate for the release of his faithful servant William de Breos, who was afterwards set free, upon the payment of a large sum of money and the surrender of Builth Castle. Llewelyn afterwards asserted, whether truly or upon false pretences it is uncertain, that De Breos while in confinement had intrigued with his wife: he invited him to a feast, seized him, reproached him with his crime, had him dragged out and hung upon a neighbouring tree. Henry, exasperated at this execution, summoned Llewelyn to appear before him at Shrewsbury. The Welsh prince disobeyed this command, entered the marches with an army, and extending his vengeance to the family, and even to the tenants of De Breos, endeavoured to make himself master of Brecknock; an attempt which two years after, in 1233, he repeated; but after having laid waste the country, he was foiled in his attack upon Brecknock Castle, raised the siege, and setting fire to the town, returned homewards with his booty. At the death of Eve, William de Breos's widow, Humphrey de Bohun, Earl of Essex, who had married their second daughter, succeeded in right of his wife to the lordship of Brecknock. War was still carried on between Edward I. and Llewelyn, till Humphrey, son of the last-mentioned lord, with the authority of the king, and by his own arms and arguments, convinced his dependents of the folly of resisting Edward. This change of adherence was fatal to the last of the Welsh princes. Llewelyn, whose supplies had been intercepted, and his army harassed by the king's troops, quitted his stronghold in Snowdon, marched towards Brecknock, and, unaware of the desertion of his friends, was slain near Builth by one Adam de Francon, who plunged a spear into his body. This event took place in 1282. Llewelyn was buried at a place now called Cefn-y-bedd (meaning the back of the grave), near Builth. In 1286 De Bohun's lands in Brecknockshire were invaded and pillaged by the retainers of his late guardian, Gilbert Earl of Gloucester, who held the lordship of Glamorgan. De Bohun quickly retaliated upon the men of Glamorganshire; and for this feud the king sentenced the two barons to forfeit for their respective lives the liberties of Brecknock and Glamorgan, and to be kept in custody during his pleasure. They afterwards compounded with the crown, Hereford for 1000, and Gloucester for 10,000 marks. At a subsequent period Humphrey was suspended in his office of high constable of England for resisting the levy of the king's taxes. He was a benefactor to the monks, and an augmenter of the liberties and privileges of the burghesses of Brecknock; he died at Plessey in 1298. He was succeeded by his eldest son, who, as an atonement for his father's conduct, surrendered to the crown the earldoms of Hereford and Essex, together with the constableness of England; and shortly after married Elizabeth, seventh daughter of Edward I., when the king, with certain reservations, restored him his office and estates. Humphrey, with a considerable force levied in his lordship, supported Edward in his war against Robert Bruce. He was taken prisoner in the battle of Bannock-burn, and was afterwards freed in exchange for Bruce's wife. In 1316 De Bohun assisted in the suppression of a formidable rising in Glamorganshire, which he however he himself afterwards invaded, in prosecution of a quarrel between himself and the king's favourite, D'Espencer. Edward, by the advice of his council, resolved to reduce these turbulent barons to obedience: some of their allies submitted; but Bohun with about 3000 men joined in the north the disaffected Earl of Lancaster, and was killed at Boroughbridge, in Yorkshire, in 1321.

The rebellion ended, the younger D'Espencer was now constituted governor of Brecknock Castle, obtained the

lordship and the property of the late Earl of Hereford. Upon the death of the D'Espencers, the confiscations consequent on the rebellion were reversed, and the property restored to the family of the Herefords, in the person of John de Bohun. This earl, after having been created knight of the bath, died in 1336. Humphrey, his brother, succeeded him, a nobleman who lived upon no very friendly terms with the burghesses of Brecon; he died unmarried, and his nephew William inherited his titles and estates. William resided in the castle of Brecknock, and by his wealth, magnificence, and hospitality considerably raised the importance of the town, and made it the great mart of S. Wales. He more than once accompanied Edward III. to France, was employed by him in an embassy to the Duke of Bretagne, and finally died in 1377. The lordship of Brecon seems to have remained in settlement during the widowhood of Joan the wife. With William ended the male line of the noble family of De Bohuns; the last of whom made ample amends for the offences of some of his predecessors, who seem to have considered their Welsh territories of no further use than as a source of revenue and a nursery for soldiers. The lordship of Brecknock now reverted to Henry IV., who had married Mary, the daughter of the last De Bohun. During the first four years of this reign, Brecknockshire was greatly harassed by Owen Glendwr. The castle of Brecknock was intrusted to the care of Sir Thomas Berkley; and in 1404 the lords of Audley and Warwick were ordered to defend the castle and the lordship, having 100 men at arms and 300 mounted archers assigned them for that purpose. Griffith, the eldest son of Owen Glendwr, engaged the king's troops upon a hill in the hund. of Crickhowell, and was defeated with the loss of 1600 men. Henry IV. granted to the inh. of Brecknock an exemption from tolls and other payments, renewed the benefactions to the monks, and gave them their first charter. Upon the death of Joan, countess dowager of Hereford, the king granted the lordship of Brecknock to Anne, the widow of Edmund, Earl of Stafford, slain in the battle of Shrewsbury, who claimed a division of her grandfather's property. No sooner was she possessed of Brecknockshire than she disfranchised the bor., revoked all the grants, charters, privileges, and immunities, and so vexed them during her life, which terminated in 1439. Her son Henry, Earl and afterwards Duke of Buckingham, succeeded to her inheritance. He was a severe, arbitrary man, who, though a warm friend and supporter of the king, was an oppressive governor and landlord. He was a Lancastrian, was wounded at St. Alban's, and slain in 1455 at the battle of Northampton. His grandson, a minor, succeeded to his honours, and to Sir William Herbert during his minority were intrusted the castle and lordship of Brecknock, as well as the stewardship of all the other Welsh castles which had belonged to the late Duke of Buckingham. Upon coming of age Buckingham obtained possession of his estates, and lived in retirement within the walls of Brecknock during the greater part of the reign of Edward IV. At the death of this king however he left the seclusion, and became a conspicuous supporter of the Duke of Gloucester, until he was seated on the throne. In reward for these services, Richard made him governor of all the castles in Wales, and lord high constable of England, with other lucrative and honourable offices; he also promised to restore to him all the lands forfeited by the Bohuns, which would have made him the richest and most powerful nobleman in England. These promises never were fulfilled. Richard knew Buckingham to be haughty and violent, and as he was a Lancastrian; he was now king; his object was gained; he evaded his engagements, and treated his former friend with negligence and contempt. The duke, incensed at the ingratitude, turned his thoughts to vengeance, and now became as eager to dethrone the king as he had formerly been anxious to exalt him. He retired to Brecknock, where Morton, the able and artful Bishop of Ely, was a prisoner, and in Ely tower in the castle was first projected a marriage between the Duke of Richmond and Elizabeth, daughter of Edward IV., and the union of the houses of York and Lancaster. Morton crossed the sea to confer with Richmond, who was on the continent, and to plan with him a descent upon England; while Buckingham endeavoured to raise an insurrection at home. Richard was so vigilant that he long ignorant of these proceedings. He sent an order, commanding the immediate attendance of the Duke of Buckingham, who disobeyed this presumptuous

mons, and took arms with his followers; but being detained by floods, betrayed by his friends, and deserted by his troops, was taken, and ultimately executed at Salisbury without a trial. Morton escaped into Flanders. The Duke of Richmond, who afterwards landed at Milford, in his road to Shrewsbury, passed through Brecknockshire, where he greatly increased the number of his followers. As soon as he was established upon the throne, he restored to Edward, the son of the last Duke of Buckingham, the estates and titles of his father, and in 1504 made him high constable of England,—the last person that ever held that office. He was afterwards accused of treason, and executed in 1531. The dukedom of Buckingham was now extinct, and the lordship of Brecknock with its dependencies merged in the crown. (*Jones's Hist. of Brecknockshire.*)

Upon the union of England and Wales, which took place in 1534, the twenty-sixth year of the reign of Henry VIII., Brecknockshire became subject to English laws and authorities, and its history from this time must be considered in conjunction with the general history of the kingdom.

Brecknockshire abounds in antiquities. The principal castles have been at Brecknock, Builth, Crickhowell, and Hay; at which last place, after the destruction of its first castle, of which nothing but an archway remains, a second was built in the reign of Elizabeth or James I., which is at this time inhabited. Besides these must be mentioned remains or traces of castles at Tretower, near Crickhowell, at Blinllyfi and Dinas, in the par. of Talgarth, at Treacastle, and Penkelly, at Bronllys, where a well-preserved round tower is standing, and at Caerberis, in the par. of Llanganten. There are traces of Roman encampments at Gaer, near Brecon, at Cwmdru, on the N. side of the Usk, near Crickhowell, and of British stations at Slwch and Pen-y-craig near Brecon, at Alltarnog, also near Pwllwrrw in Llandevalle, upon the Black Mountains, at Glasbury, Crickhowell, Miarth, Pen-ffr, Llavillo, and Llanspyddid. Cromlechs or mounds where the dead have been interred are found in many parts of the co., which has also been intersected by several Roman roads.

The Welsh language, which was formerly spoken throughout the whole of Brecknockshire, is now greatly disused in the S. and W. portions of the co. The increase of schools, as well as the inconvenience in dealing with the English who frequent the markets on its borders, have contributed to this effect. Since the year 1818 there have been opened 110 additional Sunday-schools, containing 7567 scholars, and 47 daily schools with 1248 scholars. The accompanying table shows the present state of education.

Brecknockshire.

Daily Schools.	Scholars.	Sunday Schools.	Scholars.
84	2601	131	8364

Maintenance of Daily Schools.

By Endowment. Schools.	By Subscription.		By Payment from Scholars.		By Subscription and Payment from Scholars.
	Schools.	Scholars.	Schools.	Scholars.	
11	316	4	243	68	1892
					6
					249

Maintenance of Sunday Schools.

1	24	116	8134	5	196
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Schools established by Dissenters.

Daily Schools.	Scholars.	Sunday Schools.	Scholars.
7	206	87	6421

Lending libraries are attached to only three of these schools. No infant schools have yet been established.

The amount of money expended for the relief of the poor was, for the years ending 25th March, 1826, 16,403*l.*; 1827, 17,019*l.*; 1828, 16,172*l.*; 1829, 16,264. (*Communication from Brecknockshire.*)

BREDA, once a lordship belonging to the House of Orange, and a town in N. Brabant situated at the confluence of the Merk and the Aa, in 51° 35' N. lat., and 4° 47' E. long.

Breda is a well-built and strongly fortified town, surrounded by marshes, which, in case of attack, can be laid under water. The castle, which is the principal building in the town, is surrounded by the riv. Merk. It was originally built by the family of Schoten, who held it with the title of Baron, in 1190. Breda afterwards came into the possession of the dukes of Brabant; and in the beginning of the 15th century passed by marriage to the house of Nassau. In 1567 it was annexed by the Duke of Alba to the crown of Spain. In 1577 the Spanish garrison opened the gates to

the confederates. Four years after, the town was treasonably delivered to the Duke of Parma; but it was retaken in Maroh, 1590, by Prince Maurice of Nassau, by means of the following stratagem:—A vessel was loaded, apparently with turf, of which the besieged garrison was greatly in want, but under the covering of turf a party of soldiers were concealed. Admission into the town being thus secured, the soldiers left their place of concealment during the night, and having overpowered the guard, opened the gates to Prince Maurice, who had advanced with his army. In 1625 Breda yielded by capitulation to General Spinola, who commanded the troops of the Infanta Isabella. In 1637 the town again came into the possession of the States General of the United Provinces, and was confirmed to them by the treaty of Westphalia. The French, under Dumourier, took Breda in 1793.

The castle, already mentioned, was rebuilt in 1680 by William, Prince of Orange, afterwards William III. of England. It contains a fine gallery supported by marble columns, and a very handsome staircase of free-stone.

The streets are wide, clean, and well laid out: there are four squares and a fine quay, which, as well as the ramparts, are planted with trees. The arsenal and the great market-place are among the chief ornaments of the town.

The principal Protestant church is an elegant building, with a spire 362 ft. high. There are, besides, another Protestant church, and four Roman Catholic churches, as well as hospitals for orphans and for aged persons.

Breda was once a place of considerable trade, and contained extensive manufactures of cloth: this branch of industry is still carried on to a small extent. The town likewise contains several tanneries and breweries, from which the surrounding country is supplied.

The pop. on the 1st of January, 1830, consisted of 6747 males and 6367 females.

This town was the residence of Charles II. when he was invited to return to England.

BREDOW, GABRIEL GODFREY, born at Berlin in 1773, was professor at Eutin in Holstein at the same time as Voss, afterwards at Frankfort on the Oder, and lastly in the University of Breslau. He was a learned and laborious man, especially in matters concerning antient and modern history. He wrote 'Handbuch der alten Geschichte' (Manual of Antient History, translated into English, London, 1827), 'Untersuchungen über Geschichte Geographie und Chronologie' (Researches on History, Geography, and Chronology), and 'Historische Tabellen,' which are a series of chronological tables, in which the principal events of the history of the various countries of the world are placed in synchroical order by means of parallel columns. This last work went through several editions during the lifetime of the author, and consisted of ten tables, which carried the series to 1799. Bredow died in 1814. An edition was made after his death, which contains an additional table, including the events of Napoleon's time to 1811. Bredow's tables were translated into English (1820) by Major James Bell, who added a twelfth sheet, carrying the series of events to 1820, besides adding other columns concerning British and Indian affairs. This work of Major Bell has likewise gone through several editions, in the latest of which, 1833, he has added another table, which brings the series down to 1833, and also a table of Oriental chronology. The work contains also four tables of literary and scientific chronology, translated from Bredow's text, and arranged likewise in synchroical order, exhibiting the progress of the human mind in the various countries from the oldest records in existence; and, lastly, a similar table of the principal painters, classed according to the various schools, taken from the notes of M. Van Bree. It is altogether a useful work, and executed with considerable industry, although not altogether exempt from inaccuracies in some of the details. As a book of reference it is clearer and more comprehensive than the 'Atlas Historique' of Le Sage. (Las Cases.)

In the latter tables added by Major Bell, the writer has somewhat departed from the sober matter-of-fact style of the German professor, and has occasionally indulged in qualifications, either laudatory or condemnatory, applied to political parties and transactions, which appear out of place in a work of pure and simple chronology. Some general statements are likewise too sweeping: for instance, it is said under the date of 1833, 'The kingdom of Algiers (about 600 miles in length and 170 in breadth) continues from 1830 to be occupied by the French.' So far from this being the

fact, the French even now (January, 1836) are only possessed of the city of Algiers and a small district around, and of the towns of Oran and Bona, and one or two more points on the coast. All the rest is in possession of the bey of Constantina, and of the Arabs and Kabyles, who are at war with the French.

Bredow wrote also a 'Chronicle of the 19th Century,' in which he spoke of Napoleon's power, then at its height, with a boldness that acquired him a name among the patriots of Germany.

BREEDING is the art of multiplying the domestic animals rapidly, and at the same time improving their qualities.

Any breed of animals will perpetuate itself provided there is a sufficiency of proper food for them; and the varieties found in a wild state must depend in some degree on the climate and the products of the country in which they are found. Care and domestication also produce varieties, which are much more useful or profitable than the wild breeds; and in the selection of the best individuals to propagate a useful race, and in the rearing of the young, consists the art of the breeder.

Without entering into particulars, which vary with every species of animal, and with the different varieties of the same species, we shall lay down certain principles which experience has proved to be correct, and which being attended to will greatly promote the improvement of all the different animals usually bred for the use of man, whether for his sustenance or for his pleasure. The first thing which is to be kept in view is the chief purpose for which the animal is reared, whether for labour and to assist human strength, or for speed, to convey us rapidly from one place to another;—whether merely for a supply of animal food, or to produce the raw materials of manufacture. In each of these cases distinct qualities are required; and it is seldom that two of these objects can be combined in the greatest perfection.

Having then determined the purpose for which any species of domestic animal is designed, every quality must be attended to which furthers this view; and except under very peculiar circumstances the animals intended to keep up the stock by their produce must be chosen with those qualities in the greatest perfection which are essential to the end. In all animals a perfect conformation of the bodily frame is essential to the due performance of the vital functions. The skeleton of the animal should therefore be as perfect as possible. The capacity of the chest, and the healthy nature of the lungs are points which must never be overlooked, whatever may be the purpose for which the animal is bred; for although a defect may in some measure be counteracted by a judicious choice of the individual coupled with the defective animal, it is only where there is no alternative or choice that any defect in the bodily frame of an animal kept for breeding should be overlooked. In spite of every care the defect will appear in the offspring; sometimes not till after several generations. If it were possible to find individuals without fault or defect, no price would be too great for them; and for those that have been carefully selected for several generations it is real economy to give a very liberal price. In horses bred for racing or for the chase experience has fully proved the truth of this rule; and no one who pretends to breed race-horses would breed from a mare which had a natural defect, or a horse whose whole pedigree was not free from fault. For mere swiftness the shape of the animal, whether horse or greyhound, must combine strength with great activity. The chest must be deep, the lungs free, and the digestive organs sound but small, to add as little weight to the body as is consistent with the healthy functions of nature. The legs should be long and slender, and the bones compact and strong; but the principal thing to be attended to is the courage, and no quality is so hereditary. A horse or hound of a good breed, if in health, will die of exertion sooner than give up the chase. Any defect in courage in an animal intended for great occasional exertion renders him unfit to be selected to continue an improved breed; and whatever may be his pedigree he has degenerated.

With respect to animals whose strength and endurance are their most desirable qualities, a greater compactness of form is required, a greater capacity of the digestive organs, and, according to the climate to which they may be exposed, a more suitable covering. Whether it be to ward off cold or great heat, a thick covering of hair is equally serviceable in

both cases. Hardiness of constitution is hereditary, like other qualities; and the manner in which the young are reared tends greatly to confirm or diminish this. An animal of which the breed originally came from a warm climate, like a tender exotic plant, wants artificial warmth for the healthy growth of its limbs; while the indigenous and more hardy breeds may be left exposed to the elements. An abundance of wholesome food and pure water is essential to the healthy state of every animal, as well as exercise proportioned to its strength. These are circumstances which it is obvious must be carefully attended to. There are others, the result of long experience, which are equally necessary to be known, but which are not so obvious. These vary according to the species and variety of the animal bred; and it is seldom that the same breeder is equally successful in rearing different species of animals.

In the animals selected to breed from there are *points*, as they are called, which are peculiar conformations, some of which are connected with the natural formation of the skeleton, and others appear to be the result of an association derived from the known qualities of certain individuals, and of which no very good physiological account can be given. That high withers and a freely moving shoulder-blade in a horse are connected with his speed is readily perceived, and that the length of the muscles of the quarter, and the manner of their insertion, should affect his power is equally evident; but it is not so apparent that the manner in which the ears are placed on the head, the shape of the nose or jaw, and the insertion of the tail higher or lower, has an important effect on the value of the animal, independent of any arbitrary idea of beauty. A breeder who should attend to these circumstances in the animals chosen to perpetuate the breed would find, to his cost, that it is more than mere taste which has determined these points. It is the result of observation and experience that certain breeds are invariably distinguished by certain peculiarities, and that these are almost as invariably connected with good qualities, apparently quite independent of the parts on which these points appear.

There is an indication of the disposition of an animal in the eye, in the shape of the head, and in the manner in which it is carried, which seldom deceives an experienced judge. He will not risk introducing a vicious or sulky disposition into his breed, which might counterbalance all the good qualities the animal might possess, and introduce a greater hereditary fault than any imperfection of form.

But nothing is so deceitful as the prejudices which exist with respect to peculiarities and colours. In some countries no ox or cow would be thought good of its kind that was not red or brown without spots; in others a certain portion of white is essential. In Suffolk no cart-horse is prized which is not chestnut; in Northamptonshire he must be black; in Yorkshire brown or bay. This is owing to the common colour of the breeds most esteemed in each county. In Belgium, whence the Suffolk breed originally came, but which has degenerated in its native country, a chestnut horse, with a white mane and tail, as well as a red cow, are despised. Here the reason of the prejudice is the association of the colour with some defect, and those who breed for profit by sale must be ruled by the taste of their customers. The rational mode of proceeding is to be well acquainted with the anatomy of the kind of animal which we make the subject of our attention; to learn by experience what are the peculiar qualities of the different breeds, distinguished by any particular feature, and whether these qualities have any apparent connexion with the peculiarity in make or colour. We may then be guided by the knowledge thus acquired in our choice of individuals, to perpetuate the breed, and not only preserve the useful qualities which they already possess, but gradually improve them. No greater mistake can be committed than that of making what are called violent crosses, such as coupling a very spirited male with a sluggish female, an animal with large bones with one of very slender make, a long-limbed animal with a compact one. By such crosses the first produce has often appeared much improved; but nature is not to be forced, and if the breed is continued, innumerable deformities and defects are certain to follow. The safe way is to choose the animals as nearly alike in their general qualities as possible, taking care that where there is a defect in one it exist not in the other, which would infallibly perpetuate it. A defect can never be remedied by means of another of an opposite kind, but, by great attention, it may be diminished gradually, and at last

disappear entirely. This refers however to *defects*, not to peculiar qualities. Cows, for example, may produce either milk or fat in abundance from similar food; and a species of cow, which secretes too much fat, so as to be deficient in the milk necessary to rear the calf, may be improved by selecting individuals which give more milk, and by crossing the breed with these; but we must be careful not to choose individuals which differ much in shape from the breed to be improved. A cross between a Herefordshire cow and an Alderney bull might possibly produce a good cow, but the breed of this cow would probably be of inferior quality, whether for fattening or for the dairy, and nothing but ill-formed cows, deficient in milk, and slow-feeding oxen, are likely to result from it. Every attempt to unite opposite qualities is generally attended with a bad result. If a breed has too great an aptitude to fatten, so as to endanger the fecundity of the mother or the health of the offspring, the only remedy is to diminish the food; and if, on the other hand, a difficulty is found in fattening cows which are of a peculiarly good breed for the dairy, such as the Alderney cows and other small breeds, the loss on the old cow sold half fat will have been amply repaid by the milk she has given; and the bull-calves which are not wanted to rear for bulls, if they are not profitable to fatten as oxen, must be fatted off young and sold for veal. But it is not a necessary consequence of an abundant produce of milk, that the cow, when dry, will not fatten readily; although a great propensity to fatten renders the breed less fit for the dairy. The Ayrshire, which are good milkers, fatten well when dry, and the oxen of that breed are as kind feeders as any.

Many breeders have an idea that coupling animals which are nearly allied in blood produces a weak race; others consider it as a prejudice, and among those who held the latter opinion was the famous breeder Bakewell. Without deciding this point, we should recommend avoiding too near a relationship, provided individuals equally perfect can be found of the same breed more distantly related. Every individual has some peculiar defect, and his descendants have a tendency to this defect. If two immediate descendants are coupled, this defect will probably be confirmed, whereas by uniting the descendants of different individuals the defect of either of the parents may never break out; but sooner than retrograde by coupling an inferior animal with one in an improved state, we should not hesitate to risk the consequences supposed to arise from what is called breeding in and in, that is coupling animals nearly related in blood, especially if only on one side, such as the produce of the same male by different females, or of a female by different sires. The qualities which distinguish animals in which the muscles and bones are required to be much exercised, as dogs, horses, and working oxen, are very different from those of animals destined to accumulate mere tender flesh and fat for human food. In the former there must be spirit, activity, and quick digestion; in the latter, indolence and proneness to sleep are advantageous. In the first, the lungs must play with ease, and the muscles be strong, and not encumbered with fat. In the second, the lungs must be sound, as they are essential to all the secretions, and the digestive power must be good, but slow. The food must not be accelerated through the bowels by exercise, but the absorbent vessels of the intestines must draw all the nourishment from the digested food. The more the muscles are impeded with fat, the better the animal will repay the food given him. To choose an animal to breed from, whose produce shall get fat readily, we must attend to this part of the constitution, and care little about spirit and activity. The tendency to secrete bone, and those parts which are called offal by the butchers, as being of inferior value, is a defect. Good flesh and fat are the great objects.

The manner in which the more solid parts of the body are formed, and the greater consumption of food, in proportion to the increase of weight which takes place in young animals, while bones and horns are growing, prove that it is much more expensive to produce bone than flesh, and muscular fibre than fat. Hence it is evident that the greater profit is in fattening animals that have finished their growth; and also that there is a superiority in those breeds which have small bones and no horns. This is an important point to be attended to by a breeder; as is also the time when the bony secretion is completed. A breed of animals that will cease to grow, or have attained their full size of bone at an early age, will be much more profitable to the grazier than one of slower growth. It is in

this respect chiefly that certain breeds of sheep and cattle are so far superior to others. The principles which apply to cattle are equally applicable, *mutatis mutandis*, to sheep. In no case are strong bones or horns of much importance to the sheep in its domestic state. The principal objects are wool and flesh, which appear to be dependant on distinct and perhaps incompatible qualities. The attempt to unite the two is perhaps the reason why the Spanish breed, which has been improved when transported into Saxony, has degenerated in England; so that even its crosses are not in repute. It is a matter of mere calculation, whether sheep kept for their wool chiefly are more profitable than those which give an increase of meat at the expense of the quality of the wool. A breeder of sheep who attends only to the quality of the wool, will not have his attention taken off from the main object by any deficiency in the carcase, or the disposition of the animal to increase in flesh and fat. It is possible that mixed breeds may be more profitable than the pure. Fine wool may not repay the breeder and rearer of sheep so well as moderate wool and good meat. But the principle we contend for is, that of producing the most perfect animal of any one variety existing, by correcting individual defects gradually, and avoiding fanciful crosses, which may destroy in one generation all the advantages obtained in a great many. Hence it is a matter of great importance to consider well the qualities of the individuals with which you begin your improvement, and to know that these qualities have existed in their progenitors, and are not merely accidental. If crossing appear necessary, let it be done very gradually and cautiously. No experienced breeder would ever expect to improve the fleece of a sheep of the Leicester breed or the carcase of the Merino by a direct cross between these two breeds. The offspring would most probably lose all the good qualities for which each breed is noted, and produce a mongrel breed worth little in comparison. But a cross of Merinos with South Downs, or Leicester with Cotswold, might produce new and useful breeds, and these, carefully selected, as has been done, have produced mixed breeds, which by great attention may become very valuable.

When it is determined what breed of animals you wish to perpetuate and improve, the individuals which are to be the parents of the stock cannot be too carefully selected. The more nearly they are alike in form, colour and exterior appearance, the more likely they are to produce a distinct race. They should neither be above nor under the usual size. They should be of such an age as to have entirely ceased growing, and be arrived at perfect maturity; and, whatever may be their good qualities, they should not be selected, if they are the produce of very aged parents, at least on the female side.

In horses and horned cattle many breeders prefer a male rather less in size than the female, and pretend that the fœtus has more room to develop its members in what they term a *roomy* female.* There may be some truth in this, but equality of size, or rather the due proportion established in nature, seems most likely to produce a well-formed offspring. Any considerable deviation from this is generally attended with defect. Nothing is more common than for a country gentleman who has a useful favourite mare, not particularly well bred, when any accident has rendered her unfit for work, to have her covered by some very high-bred stallion, expecting to have a very superior foal. Sometimes this succeeds, but in general it ends in disappointment, especially if the mare be small. A much more certain way is to choose a half-bred stallion, nearly of the size of the mare, and having those good points which the mare already possesses. In this case there is every probability of rearing a well-proportioned and useful animal, instead of a *cross made* one, as the breeders call them, probably from the very circumstance of these *crosses* not succeeding in general. We advert to this as a fact which many of our readers may know from experience.

To give in a few words the rules which result from what we have very briefly stated:—

Choose the kind of animal which you wish to breed from, having distinguishing qualities; keep these constantly in view and reject all individuals in which they are not as perfect at least as in the parents. Select the most perfect forms and let the defects be corrected gradually. Have patience and perseverance and avoid all attempts at any sudden alteration by bold crosses. If possible, breed two or

* See communications to the Board of Agriculture, by Mr. Cline, vol. iv.

more families of the same kind, keeping them distinct, and only occasionally crossing the one with the other. In this manner a very improved breed may be produced. The nearer you approach to perfection the more difficult will be the selection, and the greater the danger of retrograding. Hence in very highly bred stocks it is often almost impossible to keep up the perfection of the breed, and a fluctuation in the quality of the produce will take place. The more improved the breed is, therefore, the greater attention must be paid in the selection of those which are to continue it. And for want of this, almost every breed, however reputed it may have been at one time, gradually degenerates, and loses its great superiority.

As every farmer and occupier of land is more or less a breeder, if he be only a breeder of pigs, these observations may be useful. In the articles on each particular species of animal, these general principles are applied and more particular directions are given.

BREGENZ, CIRCLE OF (also called the circle of Vorarlberg), forms part of the Austrian earldom of the Tyrol, and is bounded on the N. and N.E. by Bavaria, on the S. and W. by Switzerland, and on the N.W. by the lake of Constance. Its area, according to Von Lichtenstern, is about 1560 sq. m., within which there are 3 towns, 7 m. t., and 412 vil. Being traversed by the lofty range of the Adler (or Eagle mountains), an offset of the Rhoetan Alps, which separates it from the Tyrol, it is a mountainous country, and full of forests: it possesses also fine tracts of pasture land, the grazing of which forms the principal occupation of the inh., and it produces abundance of wine, fruit, and potatoes, but not grain enough for domestic consumption. Independently of the Rhine, which skirts it for a distance of about 20 m. from Bango to the spot where the Rhine falls into the lake of Constance, Bregenz is watered by the Aach or Aeche, which runs into that lake, the lesser Tussach, which has the same outlet, and the Ill, a stream tributary to the Rhine. Cotton stuffs are woven in most parts; and mining, ship-building, the manufacture of articles of wood, felling and preparing timber, &c. constitute other branches of industry. The three towns of this circle are Bregenz, Feldkirch (1690 inh.), and Pludenz or Bludenz (about 1900 inh.), both on the Ill. The pop. is about 89,600. Bregenz, the capital, is an open, busy town, beautifully situated on an eminence at the entrance of the Aach into the lake of Constance; it is one of the oldest towns in Germany, is well built, and is divided into the old town, which occupies the sides of the eminence, and the lower town, which spreads along the shores of the lake. Bregenz contains the head school of the circle (*Haupt-schule*), three churches, two monastic establishments, an orphan asylum, a military school of natation, about 360 houses, and 2300 inh. The productions of the immediate vicinity are corn, fruit, wine, butter, and cattle; the townsmen spin flax and cotton yarns, weave cottons, bleach wax, sell considerable numbers of articles of wood, frameworks, and complete fittings of wood for houses, and export Alpine huts ready for erection to the adjoining Swiss cantons. The yearly amount of the commercial transactions of the town has been estimated at nearly 200,000*l.* sterling. The old castle exhibits vestiges of Roman construction, and appears to have formerly been a place of considerable strength. The Gerhardsberg, a high mountain, on which stand the ruins of the once spacious stronghold of the counts of Montfort, is in the neighbourhood. 47° 30' N. lat., 9° 49' E. long.

BREHON LAWS. The antient laws of the Irish, so called from being expounded by judges, named in the Irish language *Breitheamhuin*, or Brehons. *Feineachas* however and *Breitha-neimeadh*, words signifying * respectively antient laws and sacred ordinations, are the terms commonly applied to the collection of these writings by the native writers.

Prior to the Anglo-Norman invasion, Ireland was wholly governed by the Brehon law; and, notwithstanding the statements of Spenser, Davies, Cox, and others, that this was an unwritten and barbarous code, there is abundant evidence to prove that some of the collections of the *Breitha-neimeadh* are of equal antiquity with the oldest manuscripts of Irish history, whether civil or ecclesiastical, an antiquity which carries us safely back to the earlier ages of the Christian era.† The extant collections are numerous and au-

thentic, but the labour of translating, methodizing, and illustrating them must be that of years; so that nothing more can be here effected than to give such an outline of the social system of the old Irish under these laws as the available fragments, compared with the general history of the country, would point out to the reader of the various accessible authorities on the subject.

The present division of Ireland into provinces, counties, baronies, and townlands would appear to correspond pretty nearly with the old territorial distinctions of minor kingships, lordships of countries, chiefties of clans, and presidencies (if we may use the term) of villages; all subject to the dominion of the *Ard Righ*, or supreme king, and tributary, one to another, among themselves.

The law governing this community is distinguishable from the common and, so to speak, the statute law. And, first, as to the common law, or immemorial custom of the country, our information is necessarily scanty, as being derived chiefly from the reference made to such usages in the remaining fragments of the written law; for at this day there remains scarce any oral tradition available on this subject in Ireland. The constitution of the bulk of society in antient Ireland was patriarchal and pastoral. By the common law of the tribes, the ground belonging to each seems to have been divided into common pasture lands, common tillage lands, private demesne lands, and demesne land of the tribe. Each man of the tribe had then the right to pasture as many cattle as he possessed on these common grazing lands; and in proportion to the number of cattle thus pastured by each was the share of the common tillage lands assigned to him on the annual partition or hotch-potch of the lands. The private demesne lands were the distinct property of individuals who were entitled to acquire and transmit such possessions on certain qualifications not very clearly explained. The dis-

of this work; but the reader who wishes to investigate the subject is referred to the elaborate essays of Vallancey and O'Reilly (a), while we have very few of the more interesting testimonies which may be adduced. A bishop Usher, in his 'Discourse, showing when and how the imperial law came to be received by the old Irish,' speaks of the Brehon laws as contained in his day 'in large volumes still extant in their own (i.e. Irish) language.' Sir John Davies, their great opponent and final enemy, while he asserts, in his famous historical essay, that these laws were barbarous, because oral, admits, in his letter to the Earl of Salisbury, on his proceedings in Bretny O'Reilly (the present county of Cavan) and managh, in the year 1606, that a brehon who was brought before a force to give evidence as to the estates of Maguire, the lord of the country, had in his possession the antient written title-deeds, appurtenances, and rental of that principality. Sir Richard Cox declares, in his 'Appendix' prefixed to the well-known history of Ireland, that 'there was no written law digested or well-compiled rule of right; no, it was only the will of the brehon or lord.' 'The manner of deciding controversies,' says he, 'was ridiculous with the law they judged by—without clerks, registrars, or records.' 'We may be sure,' he adds, 'that some of these hereditary judges and their were very sad tools, and perhaps all of them will justly fall under suspicion, unless their advocates can show some antient learned tracts on law or policy which might remain as monuments on record.' First, as regards the tracts in the Irish language, they are very nearly as numerous, and as antique, as those on law (b); and, secondly, with regard to the point at issue, the following extract from the letters of Theodorus Roddy, a gentleman of the county of Leitrim, who lived in the beginning of the last century, is peculiarly illustrative of the question and its merits. 'I have thirty years ago of our law,' says Roddy, 'although my honoured friend, Sir Richard Cox, was once of opinion that our law was arbitrary, and not fixed or written. I satisfied him to the contrary in the summer of 1699, by showing him some of these old law books (c); which Cox has taken no step to rectify that error in his writings.' This ill-founded incredulity, joined to the difficulty of removing it by adequate translations, and sustained, perhaps, by a too-though prevalent apprehension of danger to the settlement of estates, giving publicity to documents which can in any way excite the national feelings of the native Irish, has hitherto prevented that honourable success in any other country these valuable materials would long since have been turned; so that the words of Bishop Nicholson, after the lapse of more than a century, are still as applicable as when first penned. 'I dare promise MSS.' fall into the hands of as skilful a publisher as the Welsh laws are (he alludes to Wotton, whose 'Leges Wallicæ,' or laws of Howell I have shall have occasion to refer to above), we shall have a very delightful and constructive view of many antient rites and ceremonies of this country, which yet, have continued in the almost darkness and obscurity (d). Yet what the subject has thus lain in abeyance, the materials for a better elucidation have been increasing. A collection which now fills two large quarto volumes is deposited in the library of the Royal Irish Academy. (Other materials of considerable value solicit the exertions of the legal antiquary at Shrewsbury, while the most important of several private collections can still be traced to their several owners, the transactions of the learned body alluded to, and lately been enriched by transcripts of upwards of thirty deeds and other instruments in the Irish language of the thirteenth, fourteenth, and fifteenth centuries, rude, it is true, and evincing a very primitive state of society; still, for the greater part, the work of brehons, conformable to custom and indisputable evidence that the native Irish not only possessed a fixed and written code by which to regulate the judgments of their brehons, but that these functionaries duly committed these judgments, such as they were to writing, in the very days of men whose contemptuous denial of the existence of either record has been almost universally received as true.

(a) Collect. de Reb. Hib. vols. i. and ii.; and Trans. R. Irish Acad. vol. i. &c. See also Lynch, Cambrensis Eversus, p. 137.

(b) See Catalogues of MSS. in Brit. Mus.; in Bod. Lib. Oxon.; in Trin. Col. Dub.; and in R. Irish Acad.

(c) Collect. de Reb. Hib. vol. i.

(d) Hist. Lib. for Ireland, (e) Trans. R. I. Acad. vol. xv.

* These terms are still the subject of etymological dispute: the translations given are those most generally received.

† To occur at large into these proofs would be incompatible with the design.

meane lands of the tribe were set apart for the maintenance of the chief, the chief elect, the bard, doctor, and brehon.

With regard to the nature of the property enjoyed in these several estates, the tribe at large possessed what is called the allodial or original indefeasible property in all the lands, and could not be ejected out of them in consequence of any arrears of tribute, inasmuch as the superior lord lifted only a proportion of the increase of stock upon the pastures, and was bound to take the same away at certain seasons: this rent was precisely a lay tith, being one-tenth of the increase. As to the common tillage lands, every member of the tribe possessed a life interest in them, proportioned to his stock in cattle. In the private demesne lands individuals had a permanent inheritable interest. In his separate portion of the demesne lands of the tribe, the chief had a life interest, of which the reversion lay with the tanist, *i. e.*, the *second man*, or chief elect, and in like manner the tanist, bard, &c. possessed life interests in their several portions.

The personal distinctions of the tribe, corresponding to the above territorial divisions, were, so far as can be gathered from the very confused authorities on this head, the *In-finné*, holders in common; and the *Duthaig-finné*, those individuals alluded to above who were entitled to separate inheritable possessions. The *In-finné*, or commonality of this pastoral corporation, appear to have been of one rank; but the *Duthaig-finné* were divided into several classes, of which the three most intelligible were the *Deirbh-finné* or class, as the commentators explain it, nearest the succession, who had the right to inherit the whole patrimony of their kin without deduction; the *Gall-finné*, who inherited three-fourths of their patrimonial estates; and the *Iar-finné*, whose right of inheritance extended to only one-fourth of the property left by their relations. These privileged classes were, in every tribe, limited in number; but it does not exactly appear what was the qualification for admission, or the rule of exclusion, or whether the *Deirbh-finné*, for instance, became disqualified on the election of a tanist less nearly related to them than to others, although it is evident that a man might rise from the condition of a tenant of common tillage to that of a freeholder, or *vice versa*, descend from the higher class to the lower. As to the chief himself, he was usually elected before the death of his predecessor, and the rule seems to have been invariably, that the oldest of the candidates, if not incapacitated by age or infirmity, should have the preference, the brother being commonly chosen instead of the son, and the son rather than the nephew. His revenue arose, as has been said, from the tenths of the increase of cattle, and from the revenues of his demesne lands. In addition he had certain claims of entertainment for himself and household at stated times in the houses of his tenants, in the same manner as his superiors, at certain seasons, quartered themselves or their soldiers upon him. These claims were sometimes compromised by both for an equivalent in tribute; but, as a portion, more or less, by way of homage, was generally reserved, and as the reservation, according to its extent, would seem to have had a special denomination, we have an explanation of the perplexing multiplicity of exactions which has so frequently called down the censure of our early writers, who seem to consider *coyne*, *living*, *bonaght*, *sohoran*, *cuddy*, &c. &c., as so many separate taxes, leviable on one and the same holding—an extortion apparently monstrous, and really impracticable, since there are as many denominations of tribute, according to its reserved extent, as, if added together, would amount to perhaps three times the value of the whole land.

So far of the *Finné*, or original members of the kindred, who constituted the great majority of the tribe. But in every tribe there was another class, less numerous and generally less honourable, but in many respects peculiarly interesting and important, particularly as regards the origin of the *feudal law*. The subject of feudal tenures has occupied the attention of the most distinguished English lawyers and historians. The origin of the system has been in all cases referred more or less to the necessities of military conquest, and its genius has been invariably considered as quite distinct from that of any pastoral constitution. The remains of the brehon law however would go far to show that the feudal and pastoral systems, if not to some extent identical, have been in their origin closely and necessarily connected. The system laid down above is so far calculated for the government of a society composed of tribes, each tribe possessing the allodium of its own district, and the mass of its

members holding in common. But co-existent with the first practical development of such a system, if not actually contemplated in its very rudiments, arises the necessity of providing for those members of the community who, either by chance, or choice, or compulsion, have been separated from their particular kindreds, and have thus no proper *Finné* with whom to claim a share. Such individuals could not expect to participate in the rights of blood enjoyed by those tribes among whom they might be dispersed, neither could they be received by the commonality of those tribes as tenants on their fluctuating possessions. To provide for them, it was necessary that a certain portion of the land should be set apart for the reception of strangers. To prevent the confusion of many landlords, the profits of these tenements were allotted to the chief who could thus afford to exact a lighter tribute from the *Finné* of his tribe. To induce the better sort of strangers to settle among them, the chief was empowered to grant some of these tenements in perpetuity, but the greater portion was usually let at will. As for those who had only their labour to offer in lieu of the chief's protection, they were received on his private demesne lands and became his serfs. Admission to the upper class depended on the stranger's ability to pay the entrance fine on one or more of the disposable tenements. These tenements consisted of a homestead with a certain scope of ground annexed. The homestead was denominated a *Rath*; to constitute a legitimate rath five things were requisite, *viz.*, a dwelling-house, an ox-stall, a hog-sty, a sheep-pen, and a calf-house; these buildings were generally surrounded by a ditch and rampart, and formed if necessary a place of defence as well as of residence. There is one very prevalent error with regard to raths in Ireland; *viz.*, that they were Danish erections, and designed solely for military occupation. The term 'Danish rath' is altogether a misnomer. The original titles of raths, according to the classification of the brehon law, were drawn solely from the circumstance of their erection and occupation by the natives themselves; as for example, among many others, the *Finné-rath*, a homestead occupied by the original kindred; a *Mer-rath*, one rented by stranger tenants for the first time; an *Iar-rath*, one occupied by stranger serfs on the chief's demesne lands; a *Saer-rath*, one of which the stranger tenant enjoyed the perpetuity; a *Forgu-rath*, a secondary tenement appurtenant to the *Saer-rath*, &c. &c. The entrance fine of such a tenement was denominated *sal*, and for the legitimate rath amounted to fifty head of cattle. But the most important term in this vocabulary is that applied to the stranger tenant himself. As distinguished from the *finné*, or original clansmen, the stranger tenant was called *Fuidh*, and his tenure *Fuidh*. Now these terms are pronounced respectively *Feuer* and *Few*, the identical words still employed in Scottish law to indicate the freeholder and his freehold. Hence that they are the radical form of the other feudal derivatives, such as fief, fee, &c., seems more than probable; and when we come to consider more closely the relative situation of the Irish ree-feuer, it will appear that there is something in it very analogous indeed to the older forms of pure feudal tenure. First, the allodium of the soil vested in the representative of the tribe, so that the tenure of the ree-feuef holding of the chief might be considered as *in capite*, with a power in many cases of granting meane tenures to others. Secondly, at the death of the chief a stated fine was paid to his successor. Thirdly, females could not inherit. Fourthly, raths were liable to escheat; and, Fifthly, the tenant was bound to serve the chief in war, and to diet certain numbers of his soldiery at all seasons. Of the more minute characteristics of the perfect feud as introduced by the Normans into England, such as escuage, wardship, ransom, &c. &c., there are so far few discoverable traces, but enough has been shown to give good ground for considering the Irish law of feuers, connected as it necessarily was with the pastoral constitution of their society, as the original form of feudal tenure among all the Celtic nations. Feuers were classified according to the circumstances of their migration; as those who had voluntarily left their former tribe to seek their fortunes; those whose tribe had been dispersed in war, and those who had fled or been expelled their tribe for debt, for robbery, for piracy, or murder. The first three classes only had the privilege of becoming ree-feuers; criminal fugitives were admitted only to a temporary protection, which they paid for by cattle or hand-service, on the private demesne lands of the chief, until he should compound with his prosecutors, after which they usually became his serfs or bondsmen. Bond-feuers were

attached to the soil; the lands to which they were assigned being denominated *Betagh* lands, and they themselves being frequently granted with the soil, as appears in many antient deeds, where they are specified under the name of *Betaghs*.

Thus then it would appear that the country was occupied by kindreds called *Finné*, holding for the most part in common, and by *Feuers*, who were either tenants by rent and service, or vassals of the chief. The tributes of chief to superior chief, up to the supreme king of the whole island, were regulated by established precedents. The collection of these rules for the kingdom of Munster is entitled 'The Book of Rights,' and is still extant.

So far of the common law; next as to the statute law of the Irish. Whether these particular enactments were decreed by a general assembly, as asserted by some, or by local chiefs, as affirmed by others, is a question not at present capable of satisfactory consideration. The books containing them, of whatever age, profess to be but transcripts and collections, with frequent references to similar compilations of still older date; but the text appears to be original, as its dialect is so antiquated as to require the assistance of frequent glosses, themselves very difficult to be deciphered, and even when translated not by any means easily understood. The collections are interspersed with numerous moral sentences, occasionally also with superstitious dogmas: as an instance of the first, 'Heaven is like a chariot on wheels, the more you push against it the farther it flies from you;' and as an example of the second, 'There are seven witnesses against a wicked king; viz., division in his councils, strained interpretation of the laws in his court, dearth, barrenness of cattle or lack of milk, a blight of fruit, and a blight of seed sown in the ground: these are as lighted candles to expose the misgovernment of every king*.'

The number seven would seem to have been held in much the same esteem as the mystic number three. There are, for instance, 'seven classes of persons whose anger is not to be resented; viz. bards, commanders, women, prisoners, drunken persons, druids, and kings in their own dominions.' There are again 'three deaths not to be benoaned; the death of a fat hog, the death of a thief, and the death of a proud prince. three things again which advance the subject; to be tender to a good wife, to serve a good prince, and to be obedient to a good governour.' In this last example the same idea is repeated in order to complete the triad. What virtue can have been supposed to reside in these peculiar forms of expression it is hard to conceive. The only assignable reason for their use seems to be that they were thus more easily committed to memory. The system however does not appear to have been used to any such extent in Ireland as in Wales; triads, in fact, form the bulk of Howell Dhu's laws, and those of the most arbitrary and absurd description.

But to proceed with the more practical and intelligible portion of these collections, the laws defining specific crimes and their punishments. It is said that previous to the reign of Felim Reachtair, or the Lawgiver, the *lex talionis* prevailed in Ireland, and that he altered that code for a system of retribution by mulct about A.D. 164. Parricide, rape, and murder, under certain circumstances, still remained punishable by death; but whether in consequence of this reform in the old law, or by immemorial custom, all other offences were thenceforth provided against in the *brehon* law by definite fines. The retribution thus exacted was denominated *Eneclan* or *Eric*, terms applicable also to rents, prices, and value in general. This system of erics has been justly censured by all English writers on the history of Ireland. But in this, as in most other instances, the censurers of the Irish have exaggerated the evil by considering it as peculiar to that people. So far however from being confined to the Irish, this mode of retribution by eric has been practised at one time or other by almost all the nations of Europe. The Greeks‡, the Romans§, the old Germans||, the Franks¶, the Saxons**†, the Welsh, †† all punished our present capital offences by a fine. The only difference lies in the word to express it, *potine* (*poena*), *mulcta*, *weregild*, *manbote*, *Sarhaad*, and *Eric* being syno-

nymous terms in their respective languages. In England, at the time of the Conquest, every man had his value: ... Wales, even to the time of its incorporation with England, not only had every man his own value in gross, but the particular value of all his members severally laid down by law: as six oxen and ten shillings for the two hands, a like sum for the two eyes, half that sum for one of either pair, &c. much for the ears, lips, nostrils, &c., and these again varied with the rank of the maimed individual*. It is not then to be considered either unexampled or monstrous to find an Irish chieftain requesting of the lord deputy to fix his sheriff's eric, that he might know what he should have to pay, in case of that officer coming by his death at the hands of any of his people. The amount of these erics, the different persons liable for their payment and entitled to their receipt, the proportions of these claims and liabilities, the adjustment of value and the living money by which the various proportions of the mulct were paid, and the further punishment of the offender in each case required a very minute and complicated system of enactments. That the old Irish were acquainted with coined money is asserted by numerous authorities; that they used large quantities of the precious metals as a medium of value is unquestionable; but as none save chiefs and lords of territories were required to pay tribute in metal, the dealings of the mass of the people were calculated for the standard of living money as closely as the nature of the medium would permit. Cattle were accordingly classified, and no doubt it would raise a smile on the countenance of a modern merchant to be told of calves, yearlings, heifers, strippers, in-calf cows, &c. representing the fractional part of the standard of currency, but such has been the original pecuniary † substitute in every country; and when we have the learned Selden declaring that 'pounds and shillings were not abundant in England in 1004, but paid in troy and cattle‡,' we can consider the practice in a less intolerant spirit than those who, writing but a few centuries after the use of coined money, had become common among their countrymen, have represented the barbarism of the Irish in this respect as a thing almost unheard of before. It has been seen that in proportion to the number of cattle possessed by each member of the tribe was his share of the common tillage lands. Thus cattle were not only the standard of value, but the qualification for, and a necessary concomitant of, property. The land was thus by a sort of legal fiction an appurtenance of the stock; so that the value of a person under this system that he possessed a hundred cows, implied not only that his herds amounted to so many head of cattle, but that in addition, and as a necessary appurtenance of his estate in them, he also possessed the grazing of a hundred cows, and the share proportioned to a hundred cows in the common tillage lands of his tribe. Every addition to the number of a man's cattle was therefore a virtual accession of land and produce, as *vice versa*; and thus a mulct of cattle fell as heavily on the granary as on the larder or dairy of the fined individual. For these proportionate partitions of the land took place at stated periods, and each man's harvest fluctuated with his herds as they bore a greater or a less ratio to the aggregate of all the cattle of the rest. The division of the ground into portions so uncertain precluded the use of permanent fences on those arable commons which were probably separated from the pasture by only one exterior circumvallation, while each man knew the portion that was to fall to his particular reaping-hook within. The adjustment of these portions must have been a matter of some difficulty; from an account of a partition of this kind given by Sir Henry Peters, who wrote a history of the county of Westmeath in the year 1682, § it would appear that the plan usually pursued was this. The land was divided into equal shares, in the proportion, each to the whole, of the herd of the least proprietor to the whole *creaght* or common stock of all their cattle. These shares were drawn for by lot, in order to give to all an equal chance of getting the worse or better land. Hence then, it is supposed, whose herds were thrice as numerous as those of the least proprietor, drew three such aliquot parts; he possessing ten times as many, ten such, and so on, the shares being taken here and there as they turned up, and every man cropping his own portion as he thought fit. The system is still remembered in some parts of the country, and a mode of expressing the extent of land among the Munster peasantry is still to say 'So much as

* Among the antient Britons, kings were likewise liable to be deposed on account of failure in the crops during their reigns.—Ammian. Marcell. lib. xviii.
 † Book of Ballymote, quoted by Hardiman.—Irish Minstrelsy, vol. ii.
 ‡ Homer, *Iliad*. ix. 632; xviii. 498, &c. § *Next*. Pomp. verbo *Obibus*. Noct. Attic. l. xi. c. 1. ¶ Tacit. de Mor. Germ. l. xii. and xxi. ¶ *Leges*. tit. xlv. ** *Leges Athelst.* apud Blackstone, b. iv. †† Wotton, *Leges* lca.

* Wotton *Leges Wallicæ*.

† Discourse on the origin of fends.

‡ Pecuniary money from *pecunia*.

§ Collect. de Rebus, &c. vol. 1.

follows so many cows.' Hence, in all likelihood, the term *Bally-boe*, i. e. cow-land, a term which has perplexed many writers, in consequence of the varying extent represented by it at different times and in different districts. It appears therefore that by levying all mulcts for infringements of the law in living money, the Irish brehons took the most effectual mode of making their punishments tell on the whole condition and standing of the offender in his tribe, for punishments so inflicted showed themselves, more or less, in every circumstance of his life and fortunes, and affected his landed property in all cases for a whole year at least.

In calculating by the measure, it was necessary again to fix a standard of available aliquot parts. The number three was found most convenient, and accordingly the *cumhal*,¹ a general expression of fixed value, was made to consist of three in-calf cows, and by multiples and fractions of this quantity all other proportions of value were usually regulated. Seven *cumhals*, or twenty-one cows, was the usual eric for murder on the highway. This will appear, at first sight, a very inadequate retribution, but as it is not quite clear whether the relatives of the deceased could not severally recover an eric from the murderer, and as it is an accompaniment of the punishment in this offence, that the criminal loses all right in the common tillage lands of his tribe, no matter how numerous his herds may be, after satisfying the judgment of the brehon, his punishment may not perhaps have been so much disproportioned as it would otherwise appear. Still the possession of numerous herds might thus purchase the wealthy man a privilege of violence. To guard against this, the liability increased with the rank of the culprit. Taking the liability of the ordinary clansman at one, that of the wealthy boor (*bo-airéagh*, pronounced *booré*, i. e. a person rich in cattle,) would be represented by two, that of the flaith or petty chief by three and a half, and so on to the righ or lord of his country, whose liability is raised in the proportion of seven to one. Robbery was punished, in like manner, with this salutary provision, that if the robber could not be discovered, the holder of the stolen goods should pay his eric. The sanctity of marriage was strictly guarded: the injured husband had his first redress at the hands of his father-in-law; failing him, he might levy retribution on his wife's brothers; failing them again, on her foster-children; and finally, if she had no relations, or if none of them were solvent, her tribe at large had to pay the penalty of her crime.

Next to these, the fines for trespass appear to have been attended to with peculiar strictness and care. Hitherto we have spoken of lands held in common, whether for pasturage or tillage, where there could be no fences, and consequently little trespass; but, before we enter on the code of trespass-eric, it will be necessary to recur to those lands which we have denominated the private demesne lands of the tribe in which the *Deirbh-finné* possessed their distinct inheritance. In the present state of the inquiry, it cannot be precisely ascertained how this inheritance was acquired; but such lands are frequently alluded to in the original laws, and distinctly recognized by Sir James Ware, who admits them to have been freeholds. These lands not being subject to yearly repartition, were permanently defined and fenced, and the exclusive possession enjoyed by their holders is evinced by the extreme jealousy of the law decreeing their inviolability. First, we have the legal fence defined; viz. a trench, two feet in width at bottom, three feet in depth, and three feet in width at top, with a ditch raised on one side, of these dimensions and materials, viz. twelve hands of stone work three feet thick, twelve hands of sod over that, then wooden stakes two feet asunder driven firmly into the sod, laced with wattles, and rising three hands over all. For breaking through a fence so constructed, the legal fine was thus proportioned: for every breach up to the breadth of three stakes, a heifer or young bull; for every breach above three and under five stakes, a bull full grown; for every breach over five and under eight ditto, an in-calf cow; up to twelve ditto, five cows; and so on in progressive increase. That these lands were considerable enough to be extensively wooded, appears also from the penalties against trespass on timber. The classification and comparative valuation of trees in a country which has usually been considered a wilderness of forests cannot fail to be interesting. Timber was divided into four classes—airigh, athair, foghla, and losa timber; and the fines for trespass on each were thus proportioned: airigh timber, viz. oak, ash, hazle, holly, yew, and fir—for cutting the trunk, five

cows; for cutting or maiming the limbs, a heifer; for the branches, a two-year old. Athair timber, viz. alder, willow, hawthorn, quick-beam, birch, and elm—for cutting the trunk, a cow; for the branches, a heifer. Foghla timber, viz. black thorn, elder, spindle-tree, white hazle, aspen, arbutus—for each, a heifer. Losa timber or fire-wood, viz. fern, furze, briar, heath, ivy, broom, dwarf thorn—the penalty for destroying these to be at the discretion of the brehon. Full as the classification here is, it scarcely equals in minuteness that law of Ina, a king of the West Saxons in the tenth century, which estimates the value of a tree by the number of swine its branches could give shelter to*.

But perhaps a more remarkable law is that of the Irish brehon regulating the property in bees. Honey and wax must have formed a large portion of the wealth of those days, else the various contingent interests in a species of property so hard to fix as that in a swarm of wandering bees had never been calculated and laid down with such scrupulous nicety. In the first place, the bees themselves are protected by severe enactments against injury of whatever kind. Next, they are to be left free, under heavy penalties, to choose their own place of swarming: 'to blind the bees' by casting up dust, or taking any other means to force them to descend and swarm on one's own land, while they are flying out of the lands of another, was an offence for which the punishment was no less than expulsion from the tribe and territory. The bees having voluntarily selected and settled on a tree, it then depended on the rank and privileges of the owner as well of the bees as of the tree they had chosen, what was to be the portion of wax and honey reserved for each, and how long the original owner should continue to receive that share, as the bees in all cases ultimately became the property of him upon whose tree they had alighted. The commentators on the old text here complain very bitterly of the clergy, who, it would appear, were particularly fortunate in attracting such wandering swarms to their abbey orchards, where they did not scruple to cover them with sheets, and take other unfair means of securing their stay among them. If the bees, however, were found beyond the sound of a church bell, or the crowing of a cock, in the woods or meadows, the finder was entitled to the whole proceeds, excepting a ninth part, which he had to pay by way of tribute to the chief. If these laws have been rightly translated, the old Irish must have possessed the secret of abstracting the wax and honey without destroying the swarm. In no other collection of laws are the regulations regarding this species of property so copious; in fact it would require all the space here devoted to this subject to explain the minute and complicated decrees of the brehon law regarding bees alone.

It is equally impracticable to enter fully into the law of watercourses, the enactments on which are very remarkable, inasmuch as the property of the whole water of a stream vests in him out of whose land it first springs, so that the owner of the fountain could levy tribute even on those bridges which crossed the river between banks belonging to other men, as well as on all houses (save those of the chief, the head villager, and the miller,) whose occupants drew water either from the fountain or the stream. Millers were a class peculiarly favoured in these laws: their mill-races were tax free; their mill-wrights, while pursuing their trade, could not be prosecuted for trespass; and, as above stated, their households were exempt from tribute on all water drawn for their consumption. It is worthy of remark that by the Jewish law the mill-stone could not be confiscated.

The law of rivers and sea coasts is also laid down at some length; but of the law of roads only one section hitherto has been found. This section, however, is well worth notice, as it contains proof of a much more general design in these laws than we might otherwise be disposed to give them credit for. It provides that the space of the cast of a dart shall be left from high-water mark along the sea-shore for the construction of a public coast-road round the whole kingdom. It is said that some traces of such a road are still to be seen upon the Irish coast. Vallancy states that in his day the country people called it *Brian Boru's road*; and other writers mention the remains of a great inland causeway somewhat similar to the British Watling Street, crossing the country from Dublin to Limerick, which was probably the effect of a similar provision for inland communication.

The law of fosterage is more fully stated. Every member of the *Dathaig-finné*, or gentry of the clan, was bound to

* Leges Ina, Lambard, No. 43.

send his male children to foster with some family of the *In-finné* or commonalty; for it was provided that none but fosterers could claim full eric. The *Bgairer* or foster-fee was a stated sum payable by instalments during the child's minority. While the child was thus under age, the foster-father was bound to pay one-half of his fines, in return for which the young noble or idil-man was ever after bound to protect his new kindred, and in particular to pay all fines incurred by his foster-mother, except in case of adultery, when the liability first fell upon her father and brothers, if alive and solvent.

The law of tuition provides for three chief branches of education, viz.: knowledge of cattle, as being the first and most important in a pastoral community; next, knowledge of agriculture, and finally of navigation, instruction in letters being an indispensable branch of each. These attainments were acquired under tutors hired for the purpose, and paid by the father or foster-father, according to the arrangement of the *Bgairer*, the foster-father himself being always the youth's instructor in all military and athletic exercises. The tutors alluded to were the *ollamhs* or bards, who also acted as clerks and notaries under the brehon. The offices of these functionaries, as well as of the physician, were hereditary, but not, as is generally supposed, subject to the law of primogeniture; the judge, poet, or doctor, being at liberty to select from all of his own name those apprentices whom he might think most promising in his peculiar profession.

The law of physio proportioned doctors' fees to the rank of the patient and the nature of the complaint. If a cure was not effected the doctor had no pay, but where the treatment proved successful the recompense was very liberal, as fourteen *cumhals* or forty-two cows for the cure of a bishop or provincial king, seven and a half *cumhals* for that of a lord of a country, three for that of a *bovaré*, and two for a member of the commonalty.

It is disputed whether the new series of enactments were sumptuary or merely valuatary. Doctor Ledwich adopts the latter opinion, but the tenor of the translated fragments would seem rather to imply the former. They are said to have been enacted by Mugdories, the daughter of Mogha Muadh, a king who lived in the second century. By them a certain value is established for various articles of dress and luxury, as, for example, a mantle wrought with the needle is valued at a steer or heifer. The dress of a petty-chieftain's lady is estimated at three cows; that of a head villager's wife at two; that of a bard and his wife together at three; and that of a bishop at six. The bodkin or brooch of any one under the rank of a *bovaré* was in like manner priced at three heifers; that of *bovaré* at five; that of a Flaith or petty-chief at ten; and that of a king or lord of a country at thirty. Of the same value in each degree was the bridle. The belt was estimated proportionately at about a third; and in like manner with regard to arms and armour, drinking-cups, &c. &c.

As to forms of trial, there is nothing preserved which so far throws any light upon this portion of the inquiry, except one very interesting fragment, viz., cases of disputed inheritance of lands were to be judged by twelve voices, one dissentient voice invalidating the verdict. This was the ancient law, and the commentator observes that the hardship of its extreme strictness occasioned its practical repeal.

Such, so far as can be collected from the present ill-arranged and defective materials, would appear to have been the old system of rude jurisprudence under which the Irish people lived prior to the invasion of the Anglo-Normans in the twelfth century. The conquerors brought their own laws with them; but the progress of the more complicated and formal feudal system of the continent in displacing its primitive originator and rival was necessarily very slow. The brehon law offered many attractions to ambitious individuals desirous of establishing a self-contained despotism in each of their several territories; and while the particular duties and services done by the new feudal law were rigorously exacted, the general privileges of the English constitution were denied. The subjects of the Anglo-Norman conquerors thus participated in the evils of both systems; for the protection of judicial trial by the law of England could not be claimed by the serfs of remote districts; and the power of the conquerors was too arbitrary to permit any operation of the brehon law within their bounds which was not for the sole interest of the lord: thus the poor native of the pale was ruled under both laws and protected by neither. It is not surprising therefore that the lapse of a Norman noble into

mere Irishism, by which he acknowledged the brehon code alone, was anxiously encouraged by his dependents; and such were the inducements of the system itself for turbulent and ambitious spirits, that few of the adventurous nobles who first established themselves in Ireland resisted the temptation. To guard against defection so ruinous to the whole policy of the conquest, many statutes were enacted in the parliaments of both countries. These at first were for the encouragement of the English law only, but afterwards it became necessary to take measures of prevention as well as of discouragement. The first positive act against the practice of the brehon law within the pale was passed by the parliament held at Kilkenny by Lionel Duke of Clarence, anno 1362; by which the offence is declared high treason. This was followed by the 18th Hen. VI. c. ii. iii., and the 28th do., c. i., with similar prohibitions and penalties. The prohibition, however, had little effect. The open defection of the great families of De Burgho, Bermingham, and various branches of the Fitzgeralds, in Ulster, Connaught and Munster, kept the dangerous example constantly before the eyes of the nobility on the borders of the pale, and each successive rebellion tended to increase the evil: for if the government were successful, the border barons, on whom the maintenance of that advantage afterwards depended, were proportionably more indulged; and, if the Irish prevailed, their yielding under such compulsion was the more excusable. A good example of the anomalous state of society produced by the intermixture of the two systems on the borders of the pale may be adduced from the reports made by various corporate towns of Leinster to the commissioners appointed by Henry the Eighth to inquire into the abuses of the Irish nobility anno 1537. The following is an abstract of some of the most remarkable complaints. 'All the freeholders, lay and spiritual, charged their tenants with *coyne* and *livery*, with *foy* and *pay*, with *summer-outs*, with *cutties* and *cashies*, with *black-men*, with *black-money*, with the maintenance of *mustrons*, and with *carriage* and *service* in general. Lord Kildare and Lady Catherine Poer not only required *coyne* and *livery* for their own horses and boys, but also for those of all their guests, English or Irish, particularly when they kept Easter or Christmas. When either he (Kildare) or Poer, or Ossory, hunted, their dogs were supplied with bread, milk or butter. When the deputy or any great man came to Lady Poer she levied a subsidy at her pleasure for meat, drink, and candle, under the name of 'mertyagh.' When Ossory or Poer married a daughter, the former demanded a sheep from every husbandman, and a cow from every village; and when their sons were sent to England, a tribute was levied on every village or ploughland. Lady Poer took of a tenant who had his horse or cattle stolen, 5 marks for his want of vigilance. Sir Thomas Butler exacted 10 marks at Easter, if his subjects had passed the year without galenglass or spearmen. William Bermyngham required 16 quarts to the gallon, in payments by liquid measure. Some lords took the tenants' produce at prices fixed by themselves, and thereby were enabled to forestall the markets. The brehon, who was kept by Lady Catherine Poer, took for his judgment, called 'sylogag,' 16d. of every mark sterling, both of the plaintiff and defendant, &c. &c.' By these tyrannical practices, resulting from the union of the worst parts of both systems, the brehon law fell into extreme odium, but they are chiefly the exorbitancies and malpractices of this class which have been quoted by English writers who censure it, so that if the views here taken be correct, that odium has been in great measure undeserved. Indeed the nobles of the pale seem to have established a separate code of laws for their own government, known as the *Statutes of Kilkenny*; and we find them, in the reign of Henry the Eighth, incurring a penalty of five marks on the individual who would sue by any other law. If these statutes be the index to such practices as those quoted above, it is little to be wondered at that the brehon law, which bore the blame of all, should have been denounced as it was. Great efforts were accordingly made, both in this reign and in Elizabeth's, to suppress the brehon law; the 3rd and 4th Philip and Mary, c. v. is also directed against some of its effects; but it was not till the 3rd of James that the final extirpation of the law was effected. The whole kingdom being then divided into counties, with their several sheriffs and circuits, at assize, the brehon law became a mere subject of inquiry to the antiquary, and as such, at the present day, possesses perhaps greater interest than any other branch of

Irish or Celtic archaeology. The Scotch have attempted cannot be free from numerous defects, and perhaps from some actual errors, for the materials are often vague and sometimes defective. The original MSB. are written in a dialect so unintelligible as to baffle almost all Irish scholars, and the accuracy of some of the existing translations, so far as they are, has been seriously called in question. It remains for the Learned Societies of Ireland, with whom there is no lack of means for the undertaking, to make that use of the broken Irish manuscripts in their possession, to which besides possessing similar objects in any other country of Europe would long since have turned them. A pronunciation of the Irish language is about to be established in the University of Dublin; and it is to be hoped that a step so long and necessarily delayed may now lead to some result which will do more with the research in this regard attending to that institution. (*MSS. in the Library of the Royal Irish Academy; Transactions of the R. I. A. vol. 5th, p. 117; Volcanic's Collections, vol. 1. and III.; Ledwith's Antiquities of Ireland; State Papers of the reign of Henry the Eighth (printed); Statutes of Ireland; Original Documents, vol. 10th.*)

BREISACH, OLD BREISACH or BRISACH, an ancient town on the Rhine, about 12 m. S. of Freiburg, is in the north of the Upper Rhine in the grand duchy of Baden. It was considered the outwork of Germany on the foot of the Upper Rhine, and was termed the "pillow" (cushion) of the empire, even at present it is one of the strongest fortresses in Germany. The castle was built by Berthold, duke of Zähringen. Its vicinity was the theatre of obstinate conflicts during the Thirty-years' war, and the scene of two victories gained by the Swedes over the Imperialists; the one in 1634, and the other in 1635. By the treaty of Westphalia, in 1648 Breisach was ceded to the French, but the garrison of Ryswick in 1657 restored it to the Austrians. Six years afterwards it was invested by Marshal Vaudouin, and betrayed into his hands by the Imperial general, Count Arco and Marsigli, of whom the former was tried, convicted at Vienna, and beheaded at Bergamo. Austria regained possession of the place by virtue of the treaty of Rastatt in 1715, and its works were afterwards considered much stronger by the erection of a citadel on Mount Kalkbühl. The events of the campaign of 1713 and 1714 threw it once more into the power of the French, but they evacuated it and retook the Rhine, after destroying the town and its fortifications, as well as the united towers, the only remains of the original castle which the sword of time had spared. Part of the town was burnt by the French during the revolutionary campaign in 1793; three years afterwards, General Mouton, upon recrossing the Rhine between Breisach and Hülchingen in his retreat out of Swabia, left a portion in Breisach; and the French retained possession of it in spite of the efforts of the Austrians. In 1806 the French government transferred it, together with the Breisgau, to the house of Baden. Breisach is situated on a rugged hill on the K. bank of the Rhine, between Neuch and Kalkbühl; and in conjunction with the par. of Hochstetern, which has been incorporated with it, contains about 400 houses and 3940 inh., who are engaged in mechanical pursuits, trade, and agriculture. There is likewise a considerable tobacco manufactory in the town. The Minster of St. Stephen, which has survived every calamity that has befallen Breisach, and is built in the style of German architecture, contains the monuments of several old warriors, as well as of other individuals of note. 48° 1' N. lat., 7° 22' E. long.

BREISLAK, SCYPIORE, was born at Rome in 1718, of a family originally from Germany. Cardinal Rezzina Bolognese was grandfather to him, and gave him his own Christian name. Breislak early distinguished himself for his application to the physical sciences, by which he attracted the attention of the learned Ray of Hagusa, who offered him a professorship of mathematics and physics in a college newly established at Hagusa. In that city Breislak became acquainted with the Abate Porta, from whose conversation he derived a fresh impulse toward the study of natural philosophy. After remaining several years at Hagusa Breislak returned to Rome, where he was appointed professor in the College Nazareno. He mainly contributed to form the rich cabinet of mineralogy of that institution, and he made excursions to the hills near the lake of Bracciano, N.W. of Rome, to investigate their geology and mineralogy. He published the result of his ob-

servations, "Saggio d' Osservazioni sulla Terra, Ombra e Lacere," in 1780. Afterwards, on his going to Naples, he was employed by that government in several mining examinations, and in constructing a vast distilling apparatus on the volcanic mountain called La Solfatara. His health becoming seriously affected by these labours, he was obliged to desist, and was appointed teacher in the students of artillery in the royal military college of Naples. He made frequent excursions through the province of Terra di Lavoro for the sake of geological research; the result of his observations are contained in his "Topografia fisica della Campania," Florence, 1796, afterwards translated into French with additions; and an essay on the volcanic formation of the so-called hills of Rome, "Voyage des la Campanie," Paris, 1801. Breislak had been driven to Paris by the events of 1798. At Paris he was cordially received by Fourcroy, Berthollet, Gay-Lussac, and the other scientific men of that epoch. Having returned to Italy at the end of that war, he was appointed in 1802 inspector of the mineral manufactory of sulphate and gunpowder at the Italian republic, and member of the Italian institute. From that time he resided chiefly at Milan. He wrote several treatises on the manufactory of sulphate: "Del Solfatara e dell' Acido del Solfatario," "Memoria sulla Fabbrica italiana e Raffinazione del Nitro," "Istruzione Pratica per la grande Fabbricazione di Nitro, da farsi dalla polvere di campagna." Breislak continued in the office of inspector through the various changes of government, and was under the Austrian administration till his death. In order to encourage the study of geology, which was then still in its infancy in Italy, Breislak published in 1811 his "Istruzione italiana alla Geologia," which he afterwards enlarged and published in French under the title of "Institution Géologique," Milan, 1819. This work was well received, and was immediately translated into German. Breislak was elected a member of most scientific societies in Europe. In 1816, together with Monti, Usedom, and Acosta, he formed the plan of a new scientific and literary journal for Italy, called "Biblioteca Italiana," which still holds, after twenty years, the first rank among the periodicals of that country. Breislak was one of the original contributors. In 1822 he published "Descrizione Geologica della Provincia di Mantova," which was printed at the expense of the Austrian government of Lombardy. Breislak died at Milan, February 15, 1825, universally regretted both for his scientific merit and his personal qualities. His rich collection of minerals has passed into the hands of the Bolognese family.

BREMEN, a duchy in the N.W. part of the kingdom of Hanover, bounded on the N. by the German Ocean, on the N.E. by the Elbe, which separates it from Holstein, on the E. by Lüneburg, on the S. by the Hanoverian erldom of Hoya and Brunswick, on the S.W. by the territory of the free town of Bremen, and on the W. by the Weser, which forms the boundary between this duchy and Hildesburgh. Its area is about 2020 sq. m. It was merged into the duchy of Lüneburg in 1623, and contains two municipal towns, viz. Stade, the seat of administration and Verden, 30 royal justiceships (Aemter and Königl. Justizbehörden) and 21 singular justiceships; and a pop. of about 130,000 souls in 1827, according to Ubbelohde, 147,600. The soil, which borders upon the sea and the river, is a rich and fertile marsh land, on the banks of the Elbe, from 14 to 7 ft. deep. The interior of the duchy is full of heath and moors, some of considerable extent and altogether extremely unproductive. It is a uniform level, low very low, and consists either of tracts of sand or swamps, interspersed with large blocks of granite, and very sparingly sheltered by isolated groups of trees. Of late years however successful attempts have been made to render the best parts of this dreary region available for cultivation; in 1820, for instance, 6,400 Hannoverian and 41,900 English acres were brought under cultivation, and 67 vils. were laid out upon them. Dykes are maintained at much expense to preserve the marsh-land from inundation. The principal streams in this duchy are the Ems, Bremer, Lohr, and Schwinge, which flow through it into the Elbe; and the Aller, Werra (called the Leine or Lannum near its mouth), and the Oker, which fall into the Weser; all these rivers become navigable as they approach their mouths. The native river of Bremen are the Ode, which rises on the Winterrisse near Teudell, traverses the country from S. to N., and is navigable along one half of its length, and the lesser Mader, which, as well as the Ode, enters the sea at the mouth of the Elbe. The largest can, is that which unites Hamme and Ode, and thus constitutes a

communication between the Elbe and Weser. There are several pieces of water, but none deserving the name of lakes; nor has the duchy any mineral springs. The climate is temperate but variable, and the districts along the coast subject to storms. The quantity of land under the plough and spade is estimated at about 460,000 Hanoverian or 294,680 English acres, and the extent of pasture and meadow land at about 323,000 Hanoverian or 206,920 English acres. The growth of grain and other agricultural produce is more than sufficient for the consumption. Flax and hemp and fruit in abundance, as well as vegetables, are raised; peat supplies the want of wood for fuel. Considerable numbers of horses (about 47,600), and particularly horned cattle (about 115,000), which latter are one of the main resources of Bremen, are reared; the breed of sheep, which yield a coarse sort of wool, is less attended to, and the stock does not exceed 240,000; the number of swine is between 70,000 and 73,000; geese are reared in all parts; and honey and wax are objects of attention. The stock of game is inconsiderable; there are no fisheries of importance on the rivers, but productive ones along the sea coast.

The only mineral productions of the duchy are clay and fine fuller's earth: peat also is dug. There are no large manufactories, though the spinning of linen yarn and the weaving of hempen linens and sailcloth, the making of potter's ware and tiles, as well as the manufacture of brandy and the extracting of oil from rapeseed, afford employment to numbers of families. Trade is chiefly confined to the immediate produce and wants of the country; the exports consist of grain, beans, rapeseed, peat, and fatted cattle for the Hamburg and Bremen markets, wool, rags, fruit, oil, tiles, and coarse linen. The want of a harb. on the coast had long been a great drawback upon the prosperity of the duchy; but the establishment of the 'Bremer-haven,' on the right bank of the Lower Weser and left bank of the Gerste, bids fair to remove it. Many vessels are built and navigated by the inh. of those parts adjacent to the sea; some few are engaged in the whale fishery.

The inh. are all of Low-German (*Platt-Deutsch*) extraction, and speak the Low-German dialect. They are exclusively Protestants, and the majority profess the Lutheran form of faith. There are 128 Lutheran and 7 Reformed churches of souls. There are 4 grammar-schools and gymnasia in the duchy, and a sufficient number of national schools.

This duchy was originally a bishopric, instituted in the year 788, and was raised to an archbishopric in 849; it was secularized under the treaty of Westphalia, made over to Sweden in 1648, conquered by Denmark in 1712, and sold, with the consent of both parties, to Hanover, or rather the Electorate of Brunswick in those days; namely, by Denmark in 1715 for 600,000 dollars, and by Sweden in 1719 for 1,090,000. One portion of it formed the earldom of Stade, which, for default of male heirs, was merged in the archbishopric in the middle of the 12th century; an incorporation which subsequently gave occasion to violent disputes between the prelates in possession and the dukes of Brunswick.

BREMEN, the free Hanseatic state of, in the N.W. of Germany, is situated on each side of the Weser, between 50 and 55 m. from its entrance into the N. Sea, and as an independent power, it is one of the thirty-eight constituent members of the German Confederation. Its territory, which extends from 53° 1' to 53° 11' N. lat., and from 8° 32' to 8° 58' E. long., is intersected by the Weser, and is divided into the 'domain on the right bank,' and the 'domain on the left bank,' of the Weser, together with the bailiwicks of Vegesack and Bremer-haven: it contains an area of about 67 sq. m. On the N. and E. it is bounded by the duchy of Bremen, and on the S. and W. by the Hanoverian earldom of Hoya and the duchy of Oldenburg. The surface lies low, is almost level, and consists chiefly of marsh-land. It is watered not only by the Weser, but by the Wumme and Worpe, which, after their junction with the Hamme, bear the common name of the Lesum or Lossum, and flow into the Weser on its right bank, and the Ochum, Ochmu, or Ochte, which flows into it on its left bank. In addition to those rivers, it is full of watercourses and canals. It is better adapted for rearing cattle than raising grain, and little corn is grown, except on some of the more elevated spots. Fruit and vegetables are cultivated in the more immediate vicinity of the town; but the country is destitute

The pastures are remarkably rich, and the breed of cattle is very fine. The territory contains one

town, two m. t., Vegesack and Bremer-haven, and 58 vills. and hamlets, and is divided into 14 pars. The number of houses is estimated at 8500, and the present pop. at about 57,000 souls; in 1823 it was officially stated to be 55,433; and of this pop. about 41,500 inhabit the town, and 15,500 the adjacent dependencies. The inh. are of the Protestant faith, with the exception of about 1500 Roman Catholic and a few Jewish families. The legislative power is vested in the 'senate,' which consists of four burgomasters, two syndics, and 24 senators, and in the 'convention of burgeses' (Bürger-convent), which is composed of all resident citizens who pay any considerable amount of taxes; it is called together by the senate, and no person is excluded from it on account of his religious opinions. The senators are chosen out of a certain number of candidates proposed by the burgeses, and elected by ballot by the senate: the senatorship is an appointment for life. The senators also discharge the executive functions, and are responsible ministers in this capacity: they are responsible to the convention for the due administration of the finances, and constitute the highest court of appeal in judicial matters. Some one member of the senate is placed at the head of each public dep., and civic deputies take part in every branch of the executive. The rights and control exercised by the former bishops now rest in the hands of the senate. The ministers of religion are elected by the flocks, but they cannot enter upon their functions without license from the senate, which enjoys sovereign prerogatives with respect to the privilege of granting pardons, administering justice, regulating the police and civil affairs, controlling public instruction, exercising seigniorial rights over the territorial possessions of the commonwealth, and conducting foreign affairs. But the convention participates with the senate in respect of all legislative measures, of imposing taxes, determining the amount and application of the revenues, directing military affairs, and especially determining all important matters which concern trade and navigation. Nothing was officially known on the subject of the public income and expenditure until a vote of the senate and convention, passed in January, 1831, decreed that the accounts should be annually brought before them. It appears from those which since have been presented that the ordinary receipts for 1833 amounted to 515,398 dollars, and the extraordinary to 169,131, making a total of 684,529 dollars, or about 119,790*l.*: and that the ordinary expenditure amounted to 519,512, and the extraordinary to 187,478; making a total of 706,990 dollars, or about 123,720*l.*: from which data, the excess of expenditure over income was computed at about 3933*l.* At the close of the next year, however, the deficit disappeared, and a surplus revenue of 35,000 dollars (about 6120*l.*) was passed to the credit of the ensuing year. The capital of the public debt was in 1833 stated to be 3,500,000 dollars (about 612,500*l.*), and the yearly interest upon it, 141,000 (about 24,675*l.*). After deducting this interest, and the amount of the vote proposed for the annual reduction of the capital, the remaining expenses of the state were calculated at a future average of about 375,000 dollars, or about 65,620*l.* a year. The regular soldiery compose the contingent of 485 men, which the state is bound to furnish to the army of the German confederation; besides these, there is a militia composed of all males, excepting government servants, ecclesiastics, surgeons, physicians, &c., between the ages of 20 and 35; it consists of four battalions, and musters about 2800 officers and privates, of whom those between the ages of 20 and 25 form the light infantry battalion. It is obligatory upon them to assemble once at least in the year, namely, on the 18th of October, the anniversary of the battle of Leipzig.

Bremen carries on a very extensive trade, both with foreign parts and the interior of Germany. In 1832 its imports by sea amounted to 31,284,828 pounds of tobacco, 39,500 tons of South Sea whale oil, 14,000,000 pounds of coffee, about 29,000,000 pounds of sugar, and 33,000 hogsheads and pipes of wine, besides other articles: the whole value of these imports was estimated at 13,313,127 dollars, about 2,329,790*l.* The exports, valued at about 13,000,000 dollars annually, both by land and sea, consist principally of the productions of other countries, particularly the states of the interior of Germany, such as lead, copper, iron and iron ware, glass, grain, oak and fir timber, bark, potashes, drugs, hemp and flax, wool, rags, paper, tobacco-pipes, and other manufactured goods, &c. The number of vessels which arrived in 1832 was 1116, of

which 120 were from Great Britain, and 123 from the United States; and in 1835, 1085, of which 120 were also from Great Britain. The immediate superintendence over such matters as affect trade and navigation is vested in the 'college of elders,' who are the gerents for the commercial body only, but are no way connected with the government or legislature otherwise than as its members may be individual members of the one or the other. Bremen, as one of the three remaining Hanse-towns, holds a share in common with Hamburg and Lübeck in two considerable properties in foreign countries—the 'Steel-yard' in London, and the 'Hanseatic House' in Antwerp.

The town of Bremen first rose into note in the year 787 or 788, at which time Charlemagne made it the seat of a bishopric. Its incorporation with the archbishopric of Hamburg in 858 occasioned such violent contests between the chapters of the two towns, that it was finally determined, in 1223, that Bremen should be the seat of the archbishopric. It prospered greatly under its ecclesiastical rulers, who promoted its union with the league of the Hanse Towns; but notwithstanding the archbishop's repugnance, it was recognized as a free town of the holy Roman empire so early as the reign of the Emperor Otho I. The chapter was abolished when the archbishopric was converted into a secular duchy by the Swedes, but the freedom of the town was never fully established, owing to the opposition of the dukes of Brunswick, until the year 1731, when an adjustment of their claims was effected. In 1810 Napoleon incorporated it with the French empire, as one of his 'good towns' in the dep. of the Mouths of the Weser. In 1813 the battle of Leipzig restored its independence; and it was afterwards admitted a member of the German Confederation, as one of the three Hanse Towns, by the Congress of Vienna.

The city of Bremen is situated on the Weser, which divides it into two unequal portions, the larger of which, the Altstadt or old town, is on the right, and the other, the Neustadt or new town, on the left bank of the river. The old town has large suburbs, but the new town none; the latter was begun in the year 1625, is built with much regularity, and the streets are straight and broad. The old town, though not without some handsome streets and dwellings, is full of narrow, crooked streets, which are rendered still more gloomy by the height of the houses. These two quarters are also separated by an isle of the Weser, called the Werder, the lower part of which has been built upon and included within the limits of the town. The Weser-bridge crosses the isle, and unites the two towns. The ramparts and bastions round the old town have been levelled and converted into delightful promenades, with six roads of entrance intersecting them. The quays which line both sides of the riv. afford a fine view of the town in all its length; and the suburb beyond the old town is diversified with handsome mansions, villas, and gardens. The number of houses is about 5900, independently of granaries, warehouses, mills, manufactories, &c. which, if included, would make the number of buildings upwards of 7000; and the pop. amounts to about 41,500, of whom about 14,000 are of the reformed religion, 1500 Roman Catholics, and 1900 Jews: the remainder are Lutherans. There are no open spaces of any magnitude in the town excepting the cathedral-yard (*domhof*), which as well as the market-place and doms-haide (or cathedral-place), are in the old town. Several deserted churchyards have been left unoccupied in both towns for the purpose of affording freer circulation to the air, and instead of them three cemeteries have been made outside of the city. Among the more remarkable buildings in Bremen are its 9 churches, of which 5 Protestant and 1 Roman Catholic are in the old town: the cathedral, a venerable structure in the Gothic style, was built in 1160: its length is 296 ft., breadth 124, and height 105. Underneath it is the celebrated bleikeller (or lead cellar), which derives its name from having been the spot where the lead for the roof was melted and prepared; in this cellar are a number of bodies in a state of mummy-like preservation, which have lain here for upwards of 200 years. The church of St. Angarius has a steeple of handsome appearance, 324 ft. in height. The old Gothic town-hall, formerly the archiepiscopal palace, has undergone complete renovation, and the piazzas round it have been thrown open for public accommodation. Here is the former town-hall, built in 1405, and below it the far-famed 'Rathsweinkeller' (council's wine vault), one section of which, 'the Rose,'

is said to contain old hock of as remote a vintage as the year 1624; while another, the 'Apostles' Cellar,' contains, we are told, Hochheimer and Rudesheimer, made in the early part of the 18th century, and preserved in a dozen vats, called the Twelve Apostles. Along one side of this vault are a number of small apartments, for the convenience of visitors who wish to regale themselves; at the extremity of these apartments is the acoustic-room, a sort of whispering gallery. Besides the buildings enumerated there are, the Exchange, with its noble concert and ball-rooms; the Schütting, in which the elders of the mercantile body hold their sittings; the Waterworks next the bridge, the great wheel of which performs 51 revolutions in an hour, and throws up 120 hogsheads of water into a large reservoir at every revolution; the Arsenal, Weighing-house, and Granaries; the Museum, erected in 1801, which contains a large library, collections in natural history, mechanics, the arts, &c. and lecture and reading-rooms; the two Gymnasias, and High-school; the schools for trade and navigation; the city Library; Dr. Olber's Observatory, from which he discovered the two planets Pallas and Vesta; the Theatre, and a variety of private cabinets. There are a number of public wells in the town. It has nine gates, of which three are in the new town and six in the old. There are altogether 30 parochial and elementary schools in Bremen and its dependencies. The principal manufactures carried on as well without as within the city are those of woollens, leather, hats, tobacco, (of which there are 90), refined sugar (nine of the largest class), beer, brandy, and spirits, rape oil, whale-bone, flour, soap, starch, cables and ropes, cotton-yarn, cottons and silks, white lead, &c. No large vessels can pass up the Weser beyond Braake, an Oldenburg port; smaller vessels ascend as high as Vegesack, a port belonging to Bremen, and forward their cargoes by lighters and boats. Bremen is a place of great resort for the warehousing and transit of foreign and German commodities: it possesses a bank, a discount office, and five Insurance Companies; besides an hospital, two Orphan Asylums, where between 300 and 400 orphans are maintained and educated; three almshouses for widows; and many other charitable establishments. 53° 4' N. lat., 8° 47' E. long.

(T. W. Streit's *Free Towns*; Hassel's *Free Hanse Town of Bremen*; Orome's *Germ. Confed.*; Stein and Hörschelmann's *Manual*; Stein's *Travels*; *Official Documents*, &c.)

BRENNUS, the latinised form of the Celtic *brenin*, 'king.' Two individuals are known in history by this name.

1. The first was the hero of an early Roman legend, which relates to the migration of the Gauls into Italy and their march to Clusium and Rome. In the account given by Diodorus (xiv. 113, &c.) of this singular invasion, the name of Brennus is not mentioned; in the narrative of Livy (v. 33, &c.), he figures as the 'regulus Gallorum,' or chieftain of the Gauls. When he arrived at Clusium, the inhabitants called on the Romans for aid. He engaged with and defeated the Romans on the banks of the Allia, the name of which river they ever after held in detestation, (Virg. *Æn.* vii. 717). The whole city was afterwards plundered and burnt; and the capitol would have been taken but for the bravery of Manlius. At last, induced by famine and pestilence, the Romans agreed that the Gauls should receive 1000 lbs. of gold, on the condition that they would quit Rome and its territory altogether: the barbarian brought false weights, but his fraud was detected. The tribune Sulpicius exclaimed against the injustice of Brennus, who immediately laid his sword and belt in the scale, and said 'Woe to the vanquished.' The dictator Camillus arrived with his forces at this critical time, annulled the capitulation, and ordered him to prepare for battle. The Gauls were defeated; there was a total slaughter, and not a man survived to carry home the news of the defeat. The date of the taking of Rome, assigned by Niebuhr, is the 3rd year of the 39th Olympiad, B.C. 382: (see *Hist. Rom.*, vol. ii. p. 509—567, *English Translation*.)

2. A king of the Gauls, who (B.C. 279; *Clinton*, vol. i. p. 237) made an irruption into Macedonia with a force of 150,000 and 10,000 horse. Proceeding into Greece, he attempted to plunder the temple at Delphi. He engaged in many battles, lost many thousand men, and himself received many wounds. In despair and mortification, he called a council of war, and advised the Gauls to kill him and all the wounded, to burn the waggons, and, returning home with all speed, to choose Cichorius (or Acichorius—see PAUSANIAS) king. Soon, however, in a fit of intoxica-

tion, he killed himself. (Diodorus Siculus, xxii.; *Fragm.* p. 300, *Bipont. edit.*; Pausanias, x. 19-23.)

BRENT GOOSE (zoology). [Goosx.]

BRENTA, called by the Romans *Medoacus Major*, a riv. of North Italy, derives its source from two small lakes near Pergine, in the mountains of the Tyrol, a few miles to the E. of Trento, flows E. through a long and narrow valley between high mountains, then turns towards the S. at Primolano, where it enters the Venetian territory. At Bassano the Brenta issues from the mountains into the great Paduan plain. At Limena there proceeds from it a canal called *La Brentella*, which joins the *Bacchiglione*. The Brenta continues its course in a S.E. direction, passing near Padua to the N. of it; it then assumes a course nearly due E. towards the lagoons of Venice. Near Strà, it receives a canal from the *Bacchiglione*, which passes through Padua. At Dolo, below Strà, a cut was made by the princes of Carrara, lords of Padua, which carries part of the waters of the Brenta in a S. direction for nearly 20 m. to Brondolo, at the S. extremity of the Venetian lagoons. This cut is called *Brenta Nuova*. The main stream of the Brenta, however, continuing its course to Fusina, where it entered the lagoons opposite to Venice, occasioned considerable mischief by the violence of its current and its frequent overflowing, to prevent which the Venetians made a second cut at *La Mira*, a little below Dolo, which cut runs nearly parallel to the other, and E. of it, until both streams join near Brondolo, where they enter the sea. This second cut is called *Brenta Nuovissima*. The original bed of the Brenta, from *La Mira* to *Fusina*, was at the same time embanked and made into a canal with locks, and it took the name of *Brenta Morta*, 'the Dead Brenta.' Some call it also *Brenta Magra*, 'the Shrunken Brenta.' The communication between Padua and Venice is carried on by means of this canal, by which the boats from the interior supply Venice with provisions. (Coronelli *Atlante Veneto*.) The banks of the Brenta below Padua have been long celebrated for the number of fine mansions and villas of the Venetian patricians, which follow each other for several miles. In the time of Venetian wealth and greatness, the banks of the Brenta were like a splendid suburb of Venice. The most remarkable palaces are those of *Giovannelli* at *Noventa*; *Imperiali*, formerly *Pisani*, at *Strà*; and near it, the palace *Tiepolo*; the palace *Tron*, at *Dolo*; the palace *Bembo*, at *La Mira*; that of *Foscari*, near *Moranzano*; the palace *Foscari*, adorned with paintings by *Titian* and *Paul Veronese*, &c. The country, however, being flat and low, is unfavourable to landscape effect. A recent traveller (*Valéry, Voyages en Italie*) thinks the banks of the Brenta have been overpraised; he considers the arrangement of the pleasure grounds too symmetrical, being in the old style of ornamental gardening, the trees cut into artificial shapes, &c. Several of the handsomest palaces have been pulled down since the fall of the Venetian republic, and there is an air of decay about most of those that remain. The whole course of the Brenta, with its numerous windings, is nearly 100 miles.

BRENTFORD, a m. t. of Middlesex, on the N. bank of the Thames, about 8 m. from the general post-office. It is divided into Old and New Brentford by the riv. *Brent*, which rises near *Chipping Barnet*, on the borders of Middlesex and Hertfordshire, and, after traversing a large portion of Middlesex, falls into the Thames in *Isleworth* parish. Old Brentford is in the par. of *Ealing*, *Ossulston* hund.; New Brentford in the par. of *Hanwell*, *Elthorne* hund. In 1831, the pop. of New Brentford was 2,085; of Old Brentford, including *Ealing*, 7,783.

Brentford is situated on the great western road leading from the metropolis. It is a long, straggling, ill-built town. In the par. of *Ealing*, the market gardens afford employment to many labourers as well as women and children. The trade of the town is derived from the traffic of the thoroughfare, and from flour-mills, malting, and brick-making. There are two annual fairs, held in May and September, which last three days each, for horses, cattle, hogs, &c. The market-day is Tuesday.

Brentford has derived some notoriety as having been the place of county election for members to serve in parliament. It is considered as the county town, though it possesses no town-hall nor separate jurisdiction; it is still the place of nomination, and one of the polling places for the county.

There was a bridge at Brentford over the riv. *Brent* from a very early date. In 1280 Edward I. granted a toll in aid of this bridge, by which all Jews and Jewesses passing over

on horseback were to pay a penny; those on foot a half-penny. Other passengers were exempt. The state of the bridge was long a cause of complaint, and various alterations were made to adapt it to the increasing number of passengers. In 1824 the present bridge was built, which is of stone, of one arch, 34 ft. between the parapets, 50 ft. wide in the water-way under the bridge, and 15 ft. high to the summit within the arch.

New Brentford church was rebuilt in 1764. The living is a curacy subordinate to *Hanwell*, and was at one time held by *John Horne Tooke*. There are seven daily schools, of which two are national, and three Sunday schools. New Brentford; in *Ealing*, which includes Old Brentford, there are 17 daily schools, one of which is endowed, and two others are partly endowed; eight boarding schools, and four Sunday schools. At *Ealing* there is a labour-school for the poorer classes. Some organic remains were dug up in a field near Brentford, of which an account is given in the 'Phil. Trans.' for 1813. The *Grand Junction Canal* comes into the Brent a little below *Hanwell*, and is then carried to the Thames at Brentford.

In 1616, *Edmund Ironside*, having obliged the Danes to raise the siege of London, pursued them to Brentford, and defeated them with great slaughter. On the 14th of November, 1642, an action occurred between the royalist and parliamentary forces at Brentford, in which the latter were defeated. *Patrick Ruthen*, earl of *Forth*, in Scotland, was for his services in this action, created, by *Charles I.*, earl of Brentford, a title which became extinct with him in 1642. In 1689 the title was revived by *King William*, who gave it to *Duke Schomberg*; *Schomberg's* son, who died in 1717, was the last earl of Brentford. Six Protestants suffered the stake in the town of Brentford on 14th July, 1534.

(*Lysons' Environs of London; Report of Middlesex Magistrates on the Bridges of the County, 1828; Population and Education Returns.*)

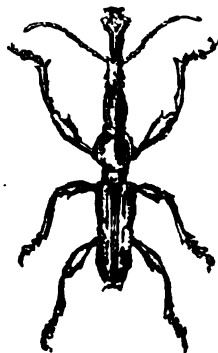
BRENTWOOD. [Essex.]

BRENTIDES, a family of coleopterous insects, belonging to the section *Rhynchophora* and sub-section *Biticornes*. Distinguishing characters:—body much elongated; tarsi with the penultimate joints bilobed; antennae filiform, or in some with the terminal joint formed into a club; proboscis projecting horizontally, generally long; the male longer than in the female; palpi minute.

The insects constituting this family are among the most remarkable of the beetle tribe, and are almost entirely confined to tropical climates: only one species has yet been discovered in Europe. But little is known of the habits of these insects, except that they are generally found crawling on trees, or under the bark, and sometimes on flowers. The most common colouring of the species is black, or brown, with red spots and markings.

The four principal genera of the brentides are as follows:—*Brentus*, *Arrhenodes*, *Ulocerus*, and *Cyclas*. The genus *Brentus* is chiefly distinguished by having the antennae eleven-jointed, either filiform or sometimes slightly enlarged towards the apex, and the body linear.

Brentus Temminckii (Klug), one of the most remarkable species of the tribe, will give an idea of their general form: it is found in Java, and is of a blackish colour varied with red markings, and has deeply-striated elytra.



Brentus Temminckii (Klug).

In the genus *Arrhenodes* the rostrum is short and terminated by two distinct mandibles, which are straight and project considerably in the males. The species inhabiting North America, and one is found in Europe, *A. italicus*.

Operaria has the antennae nine-jointed, the last of which carries a club.

Lydia has the antennae ten-jointed; the terminal joint forms an oval club; the thorax is included in the middle, and the abdomen is of an oval form.

BRESCIA, THE PROVINCE OF, in the Lombardo-Venetian Kingdom, and is that part of it which is called the government of Milan, or Lombardy Proper, extends from 45° 14' to 47° 1' N. lat., and from 9° 20' to 10° 37' E. long. It is bounded N. by the Tyrol and by the Val Camonica in the prov. of Bergamo, from which it is divided by an ridge of the Italian Alps which runs S. between the Oglio and the Chiese, E. by the lake of Garda, which divides it from the Venetia, S.E. by the prov. of Mantua, S. and S.W. by the prov. of Cremona, and W. by the prov. of Bergamo. The river Oglio and the lake of Iseo, 19 m. in length, through which the Oglio passes, mark the boundary between Brescia and Bergamo, and also between Brescia and Cremona. The length of the prov. is 84 m. from N. to S., and its greatest breadth from the lake of Garda to the river Oglio is about 40 m. The area is about 1,400 sq. m., and the pop. 323,000. (*Bollettino Statistico di Milano*, 1823.) The territory with regard to its surface and the nature of the soil may be divided into three tracts: 1. the valleys and mountains N. of the town of Brescia, which are rugged and cold in winter, and little productive; 2. the W. coast of the lake of Garda called Riviera di Salò, which has a mild climate, and produces wine, oil, and fruit in abundance; 3. the S. part of the prov., which forms part of the great plain of Lombardy, and produces corn, rice, Indian corn, flax, grass, and a great quantity of mulberry-trees. Besides the Oglio, which skirts the province of Brescia to the W. and S., two rivers, the Mella and the Chiese, cross it from N. to S., and drain the two principal valleys of its N. division. The Mella, which has its source in the mountains 22 m. N. of Brescia, flows through the Val Trompia, then passes close to the town of Brescia and W. of it, and after a course of about 20 m. enters the Oglio near Cassina. The Chiese has its source at the N. extremity of the prov. on the borders of the Tyrol; it then crosses the lake of Iseo, resulting from its N. extremity; it flows through the valley called Val Salò, N.E. of Brescia; then enters the plain, passes near Montebelluna, marks the boundary between the provinces of Brescia and Mantua for about 10 m., and afterwards leaving the territory of Brescia, divides the provinces of Mantua and Cremona until it enters the Oglio below Cassinetta. A canal, or navigable, as all canals for navigation are called in Lombardy, issues out of the Chiese at Gavardo, passes close to the town of Brescia, then runs N. nearly parallel to the course of the Chiese and W. of it, and enters the Oglio above Cassinetta, whence the boats proceed by the canal into the Po. There are many other minor canals in the prov. of Brescia, mostly for the purpose of irrigation, which is carried on to a great extent, and also for turning water and other machinery. The prov. of Brescia is crossed from W. to E. by the high road from Milan to Peschiera and Verona, from which other roads branch S. to Crema, Cremona, and Mantua. To the N. a road leads by Salò and the W. coast of the lake of Garda to Riva and Rovereto in the Tyrol, and another mountain-road leads into Valteriva by Isola in the Val Camonica. A steam boat plies between Riva and Desenzano, at the two opposite extremities of the lake of Garda.

The chief productions of the prov. of Brescia are, silk, flax, clover, and iron. Corn is produced enough for the consumption, the peasantry living upon Indian corn. In the N. valleys numerous flocks of sheep are reared, the wool of which is used for the home manufactory, especially of cloaks which were made in the district of Iseo. The iron mines of Colite, Rovereto and Pezaze in the Val Trompia, with the furnaces and forges in which the iron is wrought, are an important source of profit and employment. The manufactory of fine iron as well as of cast-iron, &c. for a long time has been long celebrated; employ also several hundred workmen. In the Riviera of Salò they spin a great quantity of flax, and have also many paper-mills. In the plains S. of Brescia silk is the great branch of industry. There are numerous silk-mills and also several manufactory of silk stuffs, but the greater quantity of the silk is spun when it is exported, and is valued at more millions of Austrian livres yearly, about 200,000, sterling. There are also manufactory of cotton and leather. Marble quarries are

worked at Rosetta Verda, and Bulticino, near Brescia; the white marble of Bantone is much valued.

The prov. of Brescia is divided into 17 districts, which contain 243 communes. (Theoristari *Statistica*, Vienna, 1829.) The towns, besides Brescia are: Chiari, 8000 ind.; Montebelluna, 2000; Lonato, 2000; Desenzano, 2000; Salò, 2000; Peschiera, 2000; Cassinetta, 2000; besides many smaller towns of between 2000 and 3000 each, such as Mantova, Ghedi, Iseo, Carpiandino, Calvisano, Verobona, Grignone, Quinzano, Bayona, Palazzolo, Iseo, Garadone, Gavardo, Tremezzo, &c., and about 200 villages. On the W. coast of the lake of Iseo the fortress of Rocca d'Adda built on a rock, is one of the strongholds of the Austrian artillery.

The prov. is administered by a delegato, each district by a commissary, and each commune by a municipal officer called *Podestà*. For the military there is a commandant at Brescia. The judicial purposes there are civil, criminal, and mercantile courts, from which there is an appeal to the upper courts of Milan. The ecclesiastical jurisdiction is vested in the bishop of Brescia. The secondary instruction is afforded by the *Liceum* and the gymnasium at Brescia, the gymnasium of Desenzano and Salò, the *Alma Mater* gymnasium and seminary for clerical students, besides a college for boarders and several private establishments authorized by the government. Female education is given by the Ursuline nuns at Brescia, and by the nuns of St. Francis de Sales at Salò. For the elementary education there are 245 schools for boys and 240 for girls, being more than one of each for every commune. The number of pupils was in 1828 17,361 boys, and 11,797 girls, being the highest number in proportion to the pop. among all the Lombard provs., that of Bergamo excepted.

The charitable institutions in the prov. are: 1. 14 hospitals for the sick, the diacono, foundlings, &c., with a revenue altogether of about 12,500*l.* 2. Orphan asylums, refuge for the destitute, for invalids, and old people; revenue 10,000*l.* 3. Eremosynary foundations, of which there is one in almost every commune; revenue 41,800*l.* They relieve the indigent of their respective communes, there being no poor rates or parochial relief for the poor in Lombardy, or indeed in any part of Italy. 4. A house of industry, or workhouse, in the town of Brescia, with an income of 700*l.*, and with generally about 210 inmates, one half of whom are unable to work, and are kept separate from the others. Houses of industry have been established in each of the principal towns of Lombardy, in consequence of mendicancy having been forbidden by law, but as yet they seem to be very indifferently administered. The government however has turned its attention to this subject as well as to that of the administration of oblatives in general, and a new plan of reform is expected. (*Bollettino Statistico*, 1823.) 5. Several Monti di Pietà, which lend money on pledges at a small interest, and issue others which lend a certain quantity of even to poor villagers and labourers, to be returned with interest in kind. The interest is about one-tenth of the capital yearly. 6. Foundations for poor students; income 563*l.*

The people of the prov. of Brescia are a fine healthy race, especially in the N. districts; they furnished the finest men to the army of the late kingdom of Italy under Napoleon. They are spirited and quick, and had once the character of being very quarrelsome; under the Venetian government, Brescia was one of the provinces of N. Italy in which many murders were committed. It must be observed however that the provinces called d'Oltra Minio, i.e. Bergamo, Brescia, and Crema, being later acquisitions of Venice, were the worst administered, especially with regard to the judiciary system. The feudal jurisdiction then in force interfered with the administration of justice. In the prov. of Brescia alone there were 20 feudal towns or villages. The old provinces of the Republic, such as Padoa, Vicenza, Verona, &c. were under a more equitable system. Things have changed in Brescia for the better in this respect, owing to more equal laws, a good police, and a better education. 'Instead of the former deadly feuds between rival families,' says a contemporary, 'the only rivalry now existing between country proprietors is about who can make the best wine. The nobles and rich landlords spend much of their time on their estates, sporting, fishing, and busily entertaining their friends' (*Poesina, Via di Ligo*, Novara.) Upon the whole the prov. of Brescia is one of the finest in Lombardy.

BRESCIA, (the Roman Brixia) the capital of the prov. of Brescia, is situated in a plain between the river Mella and the naviglio or canal which comes out of the river Chiese, and joins the Oglio in 45° 32' N. lat. and 10° 13' E. long. The hills from the N. come close to the town. Brescia is nearly square, surrounded by walls, about four m. in circuit, and has a castle on a hill which is inclosed within the walls in the N.E. quarter of the town. The pop., in 1833, was 34,000 (*Serristori Saggio Statistico*). It is a bustling, lively, well-built t., a bishop's see, and the residence of the delegate or governor of the province. Brescia has many fine churches with numerous paintings by the great masters, principally of the Venetian school. The rotunda of the old duomo or cathedral is a structure of the Longobards of the 7th century. The new cathedral is a splendid building, as well as the churches of Sta. Maria dei Miracoli, Sta. Maria delle Grazie, del Carmine, La Pace, Sta. Afra, S. Pietro, &c. They abound in paintings by native artists, among others by Moretto, a delightful painter, whose works alone, Lanzi says, are worth a journey to Brescia to see them. Among the palaces, the town-house called la Loggia, the episcopal palace, and the palaces Martinengo, Avogadri, Lecchi, Gambarà, Fenaroli, &c., deserve visiting. Of the galleries of paintings those of Count Lecchi and Count Tosi are the principal. The public library, founded by the learned Cardinal Querini, Bishop of Brescia, in the 18th century, has 28,000 volumes. Querini's voluminous correspondence with D'Aguesseau, Fleury, Montfaucon, Dom Calmet, Voltaire, &c. is preserved in the library. The rich cabinet of medals of the learned Count Mazzuchelli has been described in the *Museum Mazzuchellianum*, 2 vols. fol.

Brescia, next to Rome, has most fountains of any town in Italy. There are 72 public fountains in the streets and squares, besides some hundreds of private ones. The water comes from the hills in the neighbourhood. Many antient inscriptions have been found at Brescia, and of late years the remains of a handsome temple have been excavated. The temple appears to have been raised by Vespasian to commemorate his victory over the troops of Vitellius near Cremona. (*Tacit. Hist. iii. 27.*) Fine marble pillars, statues, and among the rest a very beautiful bronze statue of Victory have been found. (*Antichi monumenti nuovamente scoperti in Brescia illustrati e delineati con tavole in rame, Brescia, 1829.*)

The climate of Brescia is healthy, but subject to sudden storms. Provisions of every kind are abundant, and fish is brought from the lakes of Garda and Iseo. Science and literature have been cultivated at Brescia for ages past. Among the men of learning it has produced, we may mention Arnaldo da Brescia, the mathematician Tartaglia, two learned ladies, Veronica Gambarà and Laura Fereta, in the 16th century; the naturalist Father Terzi Lana, Mazzuchelli, Gagliardi, Corniani, in the 18th, and in the present century the poet Arici, the archæologist Dr. Labus, and the philologist and historian Ugoni. The painters Gambarà, Moretto, Vincenzo called il Bresciano, and others were natives of Brescia. The priest Giuseppe Beccarelli, who had been for more than twenty years at the head of a large establishment of education at Brescia, being accused of immorality and heresy, was condemned, in 1710, by the Inquisition to the galleys, which penalty the Senate of Venice commuted into perpetual imprisonment, in which he died. This was the last act of the Inquisition of Brescia. A copy of Beccarelli's interrogatory and other inedited documents concerning the same, are in the possession of Dr. Labus. A large painting in the town palace represents Beccarelli's condemnation. For a full account of the learned men of Brescia, see Cozzando *Libreria Bresciana*.

The Ateneo, or Academy of Sciences and Belles Lettres of Brescia, publishes yearly its 'Commentarii,' or Memoirs. A weekly journal is published at Brescia, 'Giornale della provincia Bresciana.' There is a handsome theatre, a casino or assembly-rooms, a large building outside of the town for the annual fair, and a new camposanto or cemetery, begun in 1815, in which the tombs are placed in rows one above the other against the walls, after the manner of the antient columbaria.

Brixia was the chief town of the Cenomani, a Gallic tribe said to have emigrated into Italy with Bellovesus, and to have settled between the Oglio, the Adige, and the Po. They were conquered by the Romans under Cornelius Cethegus, about 200 years B. C., and Brixia became a Roman colony and afterwards a municipium. After the fall of the empire

it was ravaged by the Goths, the Huns, and lastly was taken by the Longobards, and became one of the principal towns of their kingdom. Desiderius, their last king, was a native of Brescia, where he founded the monastery of St. Salvatore, called afterwards Sta. Giulia, of which his daughter Anspurga was the first Abbess. A cross, richly ornamented with cameos, representing mythological subjects, which was given by Desiderius to his daughter, is preserved in the library. After the fall of the Longobards, Brescia passed under the Carolingians: it afterwards submitted to Otho of Saxony, who gave it municipal privileges and franchises, by which it governed itself for nearly three hundred years under its own consuls. It joined the Lombard League against Frederic Barbarossa, and afterwards resisted the attacks of Frederic II. Being distracted by the factions of the Guelphs and Guibelines, it was taken successively by Ezzelino the tyrant of Padua, by the Pallavicini of Piacenza, the Torriani of Milan, the Scaligeri of Verona, and other feudal lords, until it submitted to the Visconti, of whose yoke the citizens growing tired gave themselves up to the Venetians in 1426. The league of Cambrai took it from Venice in 1509, when it passed under the French, from whom having revolted in 1512, it was retaken by storm by Gaston de Foix, who gave it up to all the horrors of pillage and massacre. It was on this occasion that Bayard was severely wounded. Soon after, by the retreat of the French, Venice recovered all its possessions, and Brescia among the rest. From that time Brescia remained under the republic till 1797, when a party of nobles and citizens, dissatisfied with the Senate, and encouraged and assisted by the French and the Milanese, revolted against Venice. Bonaparte annexed Brescia with Bergamo to the Cisalpine republic. By the peace of 1814 Brescia, with the rest of Lombardy, passed under the dominion of Austria. (In addition to the authorities cited, see *Nuova Guida per la Città di Brescia*, by P. Brognoni, Brescia, 1826.)

BRESLAU, one of the 25 government circles (*verwaltungs-bezirke*) of the kingdom of Prussia, includes the central districts of the prov. of Silesia, among which was the former principality of Breslau, has an area of about 5000 sq. m., with a pop. of about 970,000, of which nearly one-third resides in the 55 towns in the circle: about five-eighths are Protestants; and the remainder, with the exception of about 8000 Jews, are Roman Catholics. In 1800 the inh. of the districts composing this circle amounted to 478,560. It is the principal seat of the Silesian manufactures. Owing to the lofty ranges which separate it from Bohemia and Moravia, it is very mountainous in the S. part; the rest of the circle is an almost uninterrupted level. The parts which lie on the left bank of the Oder are naturally productive; but the country on the right bank, being either sandy or wooded, is much less adapted to cultivation. The spinning both of flax and cotton yarn, and weaving and bleaching of linen, are carried on to a considerable extent. Breslau also manufactures glass, paper, wax, porcelain, potashes, saltpetre, copper, iron, &c., and produces iron, tin, copper, and coals. The agricultural part of the are engaged in breeding horses and cattle, and growing tobacco, hops, grain, fruit, and vegetables. Mining, iron-timber, and working stone and wood, give employment likewise to thousands. Besides the 55 towns, of which the largest are Breslau, the capital, and next to this, Brieg (about 100,000 inh.), Schwiednitz (9000), Glatz (6700), Oels (5400), Frankenstein (5600); the circle contains 8 m. t. and 22 vills., including isolated farms. In 1818, it contained 820 hearths; but in 1831, 118,946. The circle of Breslau has 10 minor circles, one of which, also called Breslau, has an area of about 302 sq. m., and contains about 130,000 inh.

BRESLAU, a large city and university at the confluence of the Ohlau and Oder, in a spacious plain, at an elevation of 452 ft. above the level of the sea, is not only the capital of the circle of this name, but of the prov. of Silesia, and ranks as the third of the royal residence towns. The plain in which it is situated is skirted at a distance of about 5 m. to the N. by the Trebnitz mountains, and about 23 m. to the S. by the Zobten mountains, behind which the Giant Mountains, or Giant mountains may be seen from Breslau in clear weather. Its present form, an oblong quadrangle, was given to it by the Emperor Charles IV., after a great fire in 1342. In the centre of the town stands the great market, from which the four main streets branch off to the four principal gates: the suburbs, separated by the Ohlau, but connected with the city by six large and several smaller

bridges, are a continuation of the same plan, completing the whole, though denominated the 'Outer Town,' in contradistinction to the first-mentioned, which is called the 'New Town.' The regularity of their construction, combined with the width of the streets and the broad fronts and handsome elevation of the houses, gives the town a cheerful appearance; which is in contrast with the massive and more sombre aspect of the churches and public buildings. The suburbs have gained in an architectural point of view by having been recently rebuilt: they were burnt in order to clear the defences of the town when it was besieged in 1806. There are three of the suburbs on the same side of the Oder as the New Town, namely, the 'Nicolai' to the W., the 'Schweidnitz' to the S., and the 'Oblau' to the E.; but the fortifications which divided them from the New Town were razed in 1813, and a broad ditch is now interposed between them. On the N. side of Breslau lie four other suburbs, separated from it by the Oder, namely, the 'Sandinsel' and 'Dom,' or cathedral suburb, outside of the Sand Gate, and the 'Oder' and 'Bürgerwerder;' the whole of them are built on two islands formed by arms of the Oder, and connected with the New Town by one large bridge across that riv., and eight smaller ones across its arms. The ditch or canal which divides the New Town from the Nicolai suburb, is traversed by the 'King's Bridge,' which is made of cast iron, in weight about 143 tons, and was opened on the 18th of October, 1822: at each end of it is a square, that on the Nicolai side opening upon a handsome street, called 'Frederic-William's Street.' The bridges leading to the Sand and Schweidnitz suburbs have also handsome squares attached to them. The greater part of the town is encircled by an agreeable promenade, ornamented with trees and shrubs, and bounded by the banks of the Oder and the canal, as well as relieved by artificial slopes raised upon three of the old bastions. Among the numerous improvements made in Breslau of late years, is the erection of the Exchange buildings on the 'Salzring,' which is now become one of the most agreeable resorts in the town, and has changed its name into that of 'Blücher Square.' A noble monument of bronze was erected here on the 26th of August, 1827, in commemoration of Blücher's victory on the Katzbach and of the Prussian army which supported him. The statue of Blücher is raised upon a pedestal of granite, bearing on its front accent the words 'With God's aid, for our King and Country.' On one of the sides of the substructure on which the pedestal rests is also inscribed 'The people of Silesia to Field-Marshal Blücher and the Army.' The statue and its substructure are 26½ ft. in height, and the statue without the plinth 10 ft. 3 inches. Breslau contains 32 churches and 1 synagogue. The cathedral church, said to have been built between the years 1148 and 1170, is highly decorated in the interior, and contains 17 side chapels. The 'Church of the Holy Cross,' erected by Henry IV., duke of Silesia, in 1288, is in the shape of a cross, and stands upon a subterranean church of precisely the same shape and dimensions, which the same prince, whose remains were deposited in the upper church, constructed in honour of St. Bartholomew. Among the finest churches are also the church of St. Mary, on the Sand Island, begun in 1330; St. Dorothea's, the loftiest church in Breslau, founded by the Emperor Charles IV. in 1350; and the chief Protestant church, called St. Elizabeth's, in which the first sermon preached by a Protestant minister in this town was delivered on the 23rd of April, 1525. The present steeple of this last church was erected in 1534, and is about 350 ft. in height.

The royal or public buildings of the town are about 240 in number. The 'guildhall' was probably erected in the early part of the fourteenth century, and is noted for its apartment called the 'princes' hall,' where the princes or national diets formerly held their sittings. It is situated on the Parade, the finest square in Breslau, nearly in the centre of which is the city weighing-house, a building in shape like a tower, erected in 1571. Among the other public buildings are the 'royal government house,' or palace, built by Frederic the Great, at the close of the Seven-years' war; the courts of justice; the public library in the Sand suburb; the Roman Catholic gymnasium; the episcopal palace near the cathedral; the arsenal; the burg, once an imperial palace, afterwards a college of the Jesuits, and now the property of the university; and the handsome range of buildings called 'the university building.' The university was founded by Leopold I., in 1702, for the two faculties of

divinity and philosophy. Two more, for law and medicine, were added in 1811, when the university of Frankfort on the Oder was incorporated with it. The library contains upwards of 100,000 volumes. Besides a picture-gallery of 700 paintings, the university has a botanical garden, an observatory, museums of anatomy, natural history, and antiquities, a clinical hospital, &c. Between the year 1826 and the present time, the number of students has increased from 993 to upwards of 1200. The Protestants have three gymnasias here, besides a superior kind of civic school and a seminary for teachers; the Catholics, a royal gymnasium, a school for teachers, the 'Alumnat,' which is an establishment for maintaining and educating candidates for the church, and ten other schools, &c. The Jews have a good school, founded here in 1790, and another of an inferior kind. Breslau likewise possesses a provincial school of arts, where mechanics are taught drawing and modelling; a school of architecture; an obstetric institution; an asylum for the support and education of officers' daughters; a school for the working class (Gewerbschule); a refuge and school for the deaf and dumb, and another for the blind; a Sunday school; 30 elementary schools; a Bible society, with three auxiliary establishments in the circle; a Silesian society for promoting objects of public usefulness (*vaterländischer Cultur*), founded in 1803, and divided into sections for antiquities and art, history, medicine, natural history and philosophy, rural and public economy, and pedagogic; a society for Silesian history and antiquities; 14 public libraries; five museums of coins, &c.; five public collections of works of art; several hospitals and infirmaries; an hospital for faithful servants, opened in 1820; and a number of other charitable institutions. The value of the property held for benevolent purposes is little less than 300,000*l.*, and the income derived from this source as well as voluntary donations is upwards of 16,000*l.* a year. The house for the reception of the indigent infirm, and the general management of the poor throughout the circle, are under the direction of a board consisting of members chosen out of the magistracy, clergy, and citizens at large. Each of the 49 minor circles is under the control of five or six elders, besides a director and adjunct, in respect of all matters connected with the poor. The town is the seat of a royal mint and bank, and has a royal office for mining productions, a head department of mines, and other establishments incidental to its character as the centre of provincial government. There is a theatre and opera-house, and there are several musical societies, public and private.

The increase in the pop. of Breslau may be seen from the subsequent data: in 1816, the pop. was 68,738; in 1822, 74,922; in 1828, 84,904; and in 1834, 91,615, being an increase of 4012 as compared with the year 1832. Of these 91,615, the number of Protestants was 61,330; Catholics, 25,192; Jews, 5088; and Greeks, 5. In the same year (1834) the births amounted to 2944; the deaths, which were more numerous than usual, to 3238; and the marriages to 901. At that date also Breslau had 37 places for public worship; 278 public buildings; 3902 private houses; 270 mills, warehouses, and manufactories; and 1771 stables, barns, and distinct shops.

There are manufactures of all kinds at Breslau, particularly of gloves, plate and jewellery, silks, woollens, cottons, linens, and stockings; and a very extensive trade is carried on in Silesian products and fabrics, as well as foreign articles, with the interior no less than with other parts of Prussia, and with Russia, &c., to which linens and woollens are exported. The annual value of this trade is estimated at between 4,000,000*l.* and 5,000,000*l.* sterling. The fairs, of which there are six in the course of the year, are the largest, with respect to the sale of wools, in the Prussian dominions; the fairs for wool however are distinct from the others, and kept in the early part of June and October. In the first-mentioned month of the year 1827, the quantity weighed was 63,371 cwt. There is a regular communication by water between Breslau and Hamburg, conducted by an association of 100 owners and captains of vessels: the passage is never more than 32 days.

By the treaty of Breslau, concluded on the 11th of June 1742, the town, together with the whole of Silesia, was ceded by Austria to Prussia. Its fortifications, which drew down upon it the sieges of 1741, 1757, 1760, and 1806, were demolished in 1813 and 1814. It was the birth-place of C. von Wolf, the mathematician, who died in 1754, and Garve, who died in 1798. 51° 7' N. lat., 17° 4' E. long.

BRESSE, a considerable district included in the former government of Bourgogne in France, from the main part of which it was separated by the river Saône. It was bounded on the N. by the duchy of Bourgogne and by the Franche Comté, on the E. by the district of Bugey, on the S. by the government of Dauphiné, and on the W. by the Beaujolois and Lyonnais, and by the principality of Dombes, which was inclosed on three sides by Bresse. Bresse presents vast naked plains, very productive in grain of all kinds: there are also pools abounding in fish, and much poultry is reared. Bourg, the chief town, was sometimes distinguished from other places of the same name by the designation of Bourg en Bresse. Pop. in 1832, 7826 for the town, 8996 for the commune. [BOURG EN BRESSE.] Bresse is now comprehended in the dep. of Ain. The chief rivers are the Ain, Saône, and Rhône.

Under the Romans Bresse was inhabited by the Ambarri, who were kinsmen of the Aedui, the predominant people of this part of Gaul. In the division of the province of Gaul under the later Roman emperors, Bresse was included in Viennensis. It formed part of the kingdom of the Burgundians, and was included in that subsequent kingdom of Bourgogne, the sovereigns of which ascended the imperial throne. The feeble authority which these princes exercised in this extreme point of their dominion enabled the nobles of the district to acquire considerable power: the chief of these nobles were the lords of Baugé, Coligny, Thoire, Villars, &c. Bresse had subsequently its states or local legislature subordinate to those of Bourgogne. Bresse had come partly into the hands of the dukes of Savoy, who ceded it to France by the treaty of 1601, together with Bugey, in exchange for the marquisate of Saluzzo, &c.

The chief towns of Bresse, with their pop., in 1832, were as follows:—Bourg en Bresse, Montluel, 2588 for the town, 2927 for the whole comm.; Pont de Vaux, 2539 for the town, 3189 for the whole comm.; Châtillon (according to the *Dict. Univ. de la France*, Paris, 1804), 2179; Pont de Vesle, or Pont de Veyle (according to the same authority), 1364; and Baugé, or Bagé (according to the same authority), 810.

The designation Bresse was given also to a 'lieutenance-générale' of the government of Bourgogne, which seems to have included not only Bresse proper, but also Bugey, Valromey, and, according to the Map published by the 'Society for the Diffusion of Useful Knowledge,' the principality of Dombes, which other maps assign to the Lyonnais. The country was in the arch-diocese of Lyon.

The name Bresse comes from the name of a forest (*Saltus Brexius*, or *Brexia*), which, about A.D. 1000, overspread the greater part of this country. (*Encyc. Method.*)

BRESSUIRE, a small town in the dep. of Deux Sevres in France, deserving notice only from its rank of chief place of an arrond. or sub-prefecture. It is on a small stream which runs into the Argenton, a feeder of the Thoué, which falls into the Loire; and is in $46^{\circ} 50' N.$ lat., and $0^{\circ} 29' W.$ long. In the war of La Vendée, which ensued upon the French revolution, Bressuire was almost entirely destroyed. Before that war it had contained eighty manufacturers of woven fabrics, besides dyers and fullers; after the war only one house and the church remained standing. Since that period it has revived: serges and cotton goods were made, and the population rose to 1947. (*Dict. Univ. de la France*, Paris, 1804.) Woollens and linens are made there at present. The arrond. of Bressuire contained, in 1832, 60,826 inhab.

BREST, a town in the dep. of Finistère, in France, the capital of an arrond., and well known as one of the great naval stations of that kingdom. It lies on the N. side of a deep bay, called the Road of Brest, land-locked, and entered by a narrow channel called le Goulet. It is about 310 m. in a straight line W. by S. of Paris, according to Brué's map of France, and 362 m. by the road through Dreux, Alençon, Mayenne, Laval, and Rennes. By passing however from Mayenne to Rennes through Fougères instead of through Laval, 14 or 15 m. may be saved. Brest is in $48^{\circ} 24' N.$ lat. and $4^{\circ} 28' W.$ long.

D'Anville would identify Brest with the *Brivates Portus* (*βριουάρης λιμήν*) of the geographer Ptolemy, who has however, if D'Anville's hypothesis be correct, very much misplaced it; for he states that it was between the mouth of the Liger, *Αίγιψ* (Loire), and the Herius, *Ἡρίος* (Vilaine). D'Anville also considers that this place is mentioned in the Theodosian Table under the name of *Gesocribale*, or, as he would correct it, *Gesobricate* or *brivate*; a name which in

its Celtic signification, 'great harbour or roadstead,' is sufficiently appropriate to Brest. However this may be, there is no reason to believe it was a place of any great importance in the Roman time; and subsequently it appears to have sunk into complete obscurity.

In the war for the possession of the Duchy of Bretagne, between Charles de Blois and Jean de Montfort, in the 14th century, the castle of Brest is mentioned, and the contests for its possession indicate that it was a place of strength and importance in a military point of view. Between 1341 and 1346 it was taken by the partisans of de Montfort from those of de Blois; and in 1373 it was defended by an Englishman, Robert Knolles, against the attacks of the French under Duguesclin; the English and French having engaged in the war as the auxiliaries of de Montfort and de Blois respectively. In 1386, de Montfort having defeated his competitor and become Duke of Bretagne, besieged Brest, held by his former allies the English (with whom he had now broken), as security for a debt; but the attack failed, and the town was not restored till 1395, when it was given up on payment of the money for which it was held in pledge. Early in the 15th century the English were repulsed in an attempt to force an entrance into Brest harbour in order to burn some vessels that were lying there. In the war of the League, in the latter part of the 16th century, Brest was again the object of contest: it was successfully defended by De Sourdeac, in the interest of Henry IV., against an attack of the troops of the League; and in 1597 it was preserved by an opportune tempest from an attack by an overwhelming armament of Spanish ships of war.

It was not however till 1631 that the real greatness of Brest commenced: hitherto it had been a mere fortress. Cardinal Richelieu, perceiving its capability for an important naval station, caused magazines to be built, and fortifications to be erected. The favour of Louis XIV. further augmented the growth of the place: that monarch established the magnificent arsenal. In 1694 Brest was attacked by a combined fleet of English and Dutch vessels, from which a body of troops was landed in the hope of carrying the place by a coup-de-main. But the fleet was driven off the coast by a storm, and the troops, deprived of the protection of the fleet, were for the most part cut in pieces. General Tollemache, who commanded the English land forces, was mortally wounded in the thigh.

The town of Brest is of triangular form; the sides of the triangle facing the W., N.E. and S.E., respectively. The S.E. side of the triangle lies along the roadstead or bay. The port is formed by the river Penfeld, which, entering the town near the northern angle of the walls, passes through it into the roadstead with a winding course, dividing it into two parts, that on the left bank of the stream being Brest, strictly so called, while that on the right bank is known as the suburb or quarter of Recouvrance. In Brest, just at the point where the river falls into the roadstead, placed so as to command the entrance to the port, is the castle, the importance of which in the middle ages is evident from the particulars contained in the above brief historical sketch, and the strength of which is very much owing to its situation. The whole town is strongly fortified. The site of this place is very uneven; and hence has arisen the division of it into the upper and lower towns. So steep is the declivity, that the communication is made in some parts by means of steps, which in wet or frosty weather are rather dangerous, and the gardens of some of the houses are on a level with the fifth story of others. The streets in the upper town are winding as well as steep, and improvements there proceed but slowly; in the lower town they are carried on with more rapidity. In Recouvrance modern houses are rapidly superseding the Gothic edifices of a former day. Brest had, before the revolution, two par. churches, St. Louis in Brest, and St. Sauveur in Recouvrance. In the most ancient time Brest seems to have been included in the neighbouring par. of Lambesellec, which is just to the N. of the town, but its ecclesiastical state and division have undergone many changes. The Jesuits had at one time a house here with a fine garden. They conducted a seminary for training chaplains for the king's ships; but before the revolution they had been expelled; and in a map now before us (Paris, 1779) their house is said to be used as an hospital. There were also a considerable establishment of the reformed or barefooted Carmelite monks, a Capuchin monastery, and several other religious establishments.

Besides the arsenal, established as already noticed by

Bretagne is watered by the Loire and by some of its tributaries, of which the Sèvre Nantaise and the Erdre, small streams but navigable for a short distance, are all that deserve mention. Besides the facilities for navigation which these rivs. afford, Bretagne has one can. (that of the Ille and the Rance), which runs from Rennes to Dinan; and a second which runs nearly parallel to the coast, but several m. inland, from Nantes to Châteaulin, whence the communication is continued by the riv. Aulne or Châteaulin to the road of Brest. There is one lake, that of Grandlieu, S.W. of Nantes. (*Map of France*, by the Society for the Diffusion of Useful Knowledge.)

The soil varies much. In some parts, especially on the coast, it is very fertile, but there are some vast landes or heaths in the interior. The produce of corn, hemp, and flax is considerable. According to Expilly (A.D. 1762) more corn is raised than can be consumed in the province, and a considerable quantity is exported. A little wine is grown, chiefly about Nantes; the common drink of the people is cider. When the quantity of wine is greater than usual, it is converted into brandy. There is much pasture land, and a considerable number of cattle are raised. The butter, especially that made in the neighbourhood of Rennes, is in good repute. The mineral riches of this province consist of an abundance of lead, also of iron, tin, antimony, and some silver; marble and coal. For further particulars of the produce of this province, the reader is referred to the several departments into which it is now divided.

The pop. of the five depts. into which Bretagne is divided was, in 1832, 2,573,935. Expilly, in his *Diction.* (Paris, 1762), gives the pop. at 1,660,451. Their origin will be more particularly noticed in treating of their history. The language of Lower Bretagne has for its basis that of the ancient Celtæ, but of more modern form and more mixed character than the Welsh, which is another branch from the same stock. In Upper Bretagne French is spoken.

The following extracts from Mrs. C. Stothard's 'Letters written during a Tour in Normandy, Brittany, and other parts of France, in 1818,' 4to., 1820, describe the present condition of the peasantry of this province.

'The Bretons dwell in huts, generally built of mud; men, pigs, and children live altogether without distinction, in these cabins of accumulated filth and misery. The people are indeed dirty to a loathed excess, and to this may be attributed their unhealthy and even cadaverous aspect. Their manners are as wild and savage as their appearance; the only indication they exhibit of mingling at all with civilized creatures is, that whenever they meet you they bow their heads or take off their hats in token of respect. I could not have supposed it possible that human nature endured an existence so buried in dirt, till I came into this province. The common people are apparently in the very lowest state of poverty. In some parts of Brittany the men wear a goat-skin dress, and look not unlike Defoe's description of Robinson Crusoe. The furry part of this dress is worn outside: it is made with long sleeves, and falls nearly below the knees. Their long shaggy hair hangs dishevelled about their shoulders, the head being covered by a broad flapped straw or beaver hat. Some few of the Bretons go without shoes or stockings; but the generality wear sabots (wooden shoes), and thrust straw into them to prevent the foot being rubbed by the pressure of the wood. You frequently see the women, both old and young, sauntering along the fields with the distaff, employed in spinning off the flax. The girls carry milk upon their heads, in a vessel of rather an elegant form, somewhat resembling the common Roman household vessels.'—pp. 195, 196.

'The Breton language appears to me, from the number of French words I continually hear spoken with it, far more corrupted than the Welsh. I imagine it probably arises from the people of Brittany holding a freer intercourse, and having mixed more with the French than the Welsh formerly did with the English: this may be accounted for, as Brittany is certainly a country easy of access, nor is it defended or insulated by those barrier mountains that characterize Wales.

'The Bretons do not resemble in countenance either the Normans or French, nor have they much of the Welsh character. They are a rude, uncivilized, simple people, dirty and idle in their habits. . . . The women are invariably dressed in the particular costume I have already described.* It differs here and there, but not importantly,

* This description is not quoted here.

in some of the districts. Many of the women of the very poorest kind wear this dress till it becomes so dirty, patched, tattered, and ragged, that you can scarcely trace what it had originally been; and I have seen several children so wretchedly off for clothing, that they run about almost in a state of nature. The women who appear tolerably respectable, and are dressed decently in their singular costume, look florid and healthy; while those attired in the ragged garments, bear a squalid and meagre aspect—this arises, I am induced to believe, from the greater dirt and poverty of the latter class.

'The chestnut abounds in Brittany; there are many large forests composed entirely of that tree: their produce, boiled in milk, supplying a means of subsistence for the poor during the greater part of the year. The people collect the chestnuts in sacks, and pile them up within their cabins—several families are even so needy, that they seldom taste the luxury of bread; but these are amongst the children of wretchedness in the extreme degree. I am informed that in the neighbourhood of Brest the lower orders resort to acorns as well as chestnuts for food, which have some nutritious qualities when boiled in milk. The Breton houses (excepting in the towns) are generally built of mud, without order or convenience. It is absolutely a common thing in Brittany for men, women, children, and animals, all to sleep together in the same apartment, upon no other resting-place than that of the substantial earth, covered with some straw. We once saw, near Josselin, a man drive into his cabin a cow and a horse, followed by a pig, and afterwards entering himself he shut the door.'—p. 253-255.

'The Bretons inhabit a fine country, capable of rendering them prosperous and wealthy, but little cultivated by their own exertions; and they owe their chief support to the abundant forests of chestnut, and the indigenous productions of their soil. Vast tracts of country appear overgrown with wood, in some parts impenetrably thick and wild; others, where a richly-laden harvest would amply repay the labours of the plough, remain totally neglected. The Breton grovels on from day to day, and from year to year, in the same supine idleness and dirt. If you chance to meet a Breton, and ask him why, when there are so many groves of apple-trees, he does not make cider (for the greater quantity is imported from Normandy), he will tell you, his father never did so. If you say, why not grow more corn? he answers, I have gathered chestnuts from a boy.'—p. 256.

Bretagne possessed before the revolution a local legislature (*Les États Généraux—States General*), once held every year, but after 1630 only every two years. The order of the nobles and of the clergy formed constituent parts of these states: the third part, *Le Tiers Etat*, consisted of the deputies of the following places, which may be considered as antiently of the greatest importance in the prov. The pop. is from the returns of 1832.

	POPULATION.	
	Towns.	Communes.
Rennes (on the Vilaine)	27,340	29,650
Vannes (on the bay of Morbihan)	8,682	10,395
Nantes (on the Loire)	77,992	87,191
St. Malo (on the sea)	9,701	9,981
Dol (near the sea)	3,098	3,939
St. Brioux (near the sea)	10,420	—
Quimper (on the Odet)	9,960	—
St. Pol de Léon (on the sea)	3,106	6,692
Tréguier (on the sea)	3,178	—
La Guerche (near the Seiche, a branch of the Vilaine)	2,100	4,219
Fougères (on the Couesnon)	7,446	7,677
Hédé (between Rennes and Dinan)	—	—
Vitré (on the Vilaine)	7,602	8,856
Guérande (on the sea)	2,041	8,150
Le Croisic (on the sea)	2,200	2,253
Ancenis (on the Loire)	3,263	3,749
La Roche Bernard (on the Vilsine)	—	—
Chateaubriand (on the Cher, a branch of the Vilaine)	3,027	3,709
Rédon (on the Vilaine)	3,020	4,504
Malétroit (on the Oust, a branch of the Vilaine)	1,687	1,781
St. Gildas de Rhuys (on the sea)	—	—
Auray (on the Auray, near the sea)	3,734	—
Hennebon (on the Blavet)	3,360	4,477
Pontivy (on the Blavet)	4,112	6,956

	POPULATION.	
	Town.	Commune.
Quimperlé (on the Aven, near the sea)	3,866	5,275
Lamballe (between St. Brieux and Dinan)	4,390	—
Plémerlé (near the Due, a branch of the Oust)	2,271	4,851
Josselin (on the Oust)	2,485	2,654
Montfort (on the Meu, a branch of the Vilaine)	—	—
Dinan (on the Rance)	8,044	—
Concarneau (between Quimper and Quimperlé)	—	—
Carhaix (on the Hière, a branch of the Aulne)	1,796	1,939
Lesneven (between Brest and St. Pol de Léon)	2,050	2,404
Landerneau (near Brest)	3,905	4,933
Morlaix (near the sea)	7,797	9,596
Lannion (near the sea)	5,196	5,371
Guingamp (on the Trieux)	6,100	—
Quintin (near St. Brieux)	4,293	—
Moncontour (between Lamballe and Pontivy)	1,670	—
Brest (on the road of Brest)	29,860	—
Lorient (on the Blavet, near the sea)	14,396	18,322

For an account of the more important of these towns the reader is referred to their respective articles; for the others to the dep. in which they are situated.

The staple manufacture of Bretagne is linen and hempen cloth of all degrees of fineness: there is a great deal made of a half-bleached linen called *blanchard*, of medium fineness, exported to hot countries. The articles of superior fineness and excellence are exported to Spain, South America, and the French colonies. The people of the coast are much employed in fishing: the sardine or pilchard, the mackerel and the cod, are the fish most taken. That part of the coast which is near the mouth of the Loire has some salt marshes, in which a considerable quantity of salt is made. (Malte Brun, Expilly, *Encyc. Method.*)

History of Bretagne. Celtic and Roman periods.—Bretagne was an early seat of the druidical superstition, and contains some vast monuments at Carnac and elsewhere, which tradition represents as consecrated to the purposes of this antient religion. Invasions of Bretagne from the British isls. or of the isls. from Bretagne, figure in the accounts of the early historians, or the traditions of antient times: but little or nothing certain seems to have been known before the time of Cæsar's invasion of Gaul.

At that time the states along the coast from the Seine to the Loire had the general epithet of *Armorica*, a name which the most probable etymology explains to mean 'maritime,' from the Celtic words *Ar Mor*, 'on the sea.*' Of these Armorican states the Rhedones, the Curiosolites (Cæsar), or Cariosuelites (Pliny), the Osismii, Corisopiti (not mentioned, so far as we know, by Cæsar), and the Veneti, were included in Bretagne. Among the Armorican states mentioned by Cæsar are the Lemovices (de B. G., vii. c. 75.); but as a people of the same name, whose situation (the Limousin) was not maritime had been previously enumerated, some persons (M. de Valois and others) have suggested that the original reading was Leonenses, and that the people dwelt in the country near St. Pol de Léon. D'Anville amends the conjecture by substituting Leonnices for Leonenses; and if this be adopted we must add this people to those included in Bretagne. The remainder of the Armorican states were beyond the frontier of Bretagne, chiefly in Lower Normandie. The Namnetes, who are not enumerated among the Armorican states, were included in Bretagne, which also comprehended part of the territory of the Pictones (the people of Poitou), acquired by the dukes of Bretagne at a subsequent period.

The names of these antient people, embodied in the names of their chief towns or other places, have been transmitted to the present day: thus we trace the Rhedones in Rennes, and perhaps in Rédon; the Curiosolites in Corseult, between Dinan and Lamballe; the Veneti in Vannes; the Namnetes in Nantes; and the Leonnices or Leonenses, if we adopt the conjecture of M. D'Anville or M. de Valois in St. Pol de Léon.

In the second year of Cæsar's command in Gaul he sent

* The Slavonic words *Fv Mor* have a similar meaning; whence the German part of the Baltic coast has the name of Pomerania, called by the English Pomerania. In like manner the coast of the Black Sea had among the antients the name of Pontus, abbreviated from Cappadocia ad Pontum.

one of his lieutenants, P. Crassus, with one legion to subdue the Armorican states; and so great was the terror of the Roman arms that they submitted without striking a blow. But they revolted the next year, having seized the envoys whom P. Crassus had sent to procure corn; the Veneti taking the lead in the revolt and instigating the others. The influence of this state, according to Cæsar, far exceeded that of any other on this part of the coast, not only because they had more ships (in which they traded with Britain), and greater knowledge and experience in naval affairs, but also because their possession of the few harbours which lined the coast of the wide and tempestuous ocean enabled them to exact tribute from those who frequented that sea. Cæsar acted with his usual vigour. He ordered a fleet to be built on the Loire, and manned with seamen from the coasts of the Mediterranean; he despatched his lieutenants into different parts to check those who might be inclined to aid his enemies, and to detain them at home for the defence of their own country. He himself marched into the country of the Veneti, who trusting to the difficulties which would impede his march, to the scarcity of provision, and to the ignorance of the Romans of their coast, fortified their towns, collected into them the corn that was out in the country, allied themselves with other states as far off as the Morini and Menapii (people of Picardie and the Netherlands), sent for aid over into Britain, and prepared for a stout resistance. Cæsar describes their vessels as having flatter bottoms than the Roman, and as being thus better adapted for a coast abounding with rocks and shallows, while the height of the prow and stern enabled them to withstand the violence of the tempests, and the general strength with which they were built secured them from being much injured by the beaks of the Roman ships. Their sails were of hides, which they used either for their strength or because they knew not the art of manufacturing linen cloth. Their fleet consisted of 220 vessels. Cæsar stormed their towns, defeated their navy in a great battle, and forced them to submit. To punish them for violating the law of nations by detaining the Roman envoys, he put all their senate to death, and sold the rest of the people into slavery.

In the general rising of the Gauls, towards the close of Cæsar's command, when the different states sent their respective contingents to the force destined to raise the siege of Alesia, the whole of the Armorican states contributed but 6000 men; and this appears to have been the last effort they made for independence while Cæsar was in Gaul. During the continuance of the Roman government we hear little of them. One or two revolts served to show either their unsubdued love of freedom, or the intolerable yoke to which they had been forced to succumb: but these revolts were unsuccessful, and only riveted faster the chains they were intended to burst. In the subdivision of Gaul, Bretagne formed part of the prov. *Lugdunensis Tertia*.

It was towards the close of the Roman dominion that those immigrations from the isl. of Britain are said to have commenced to which this prov. owes many of its peculiarities.

In 284 some Britons, harassed by the piracies of the Saxons and other Germans, forsook their native land and settled in Armorica, where the Emperor Constantius Chlorus gave them lands. A similar emigration is said to have taken place in the year 364. These emigrations were however unimportant in their character and influence, unless we suppose that from them the prov. or some portions of it received the name of Britannia, which is given to it by Sulpitius Severus before any subsequent invasion had taken place. (*Carte, Hist. England*, vol. i. p. 6.) The next settlement, that which took place under the usurper Maximus, has been the subject of much dispute. Those writers who have engaged in the controversy have had political interests to serve; the native Bretons contending for their provincial privileges, other writers contending against them on behalf of the crown, and each conceiving that the success of their cause depended on their proving or disproving the independence of the early Breton princes of the crown of France.

The account which has been received by Daru (*Histoire de Bretagne*, 3 tom. 8vo., Paris, 1826), though contested by many, and among others by Gibbon (*Decline and Fall*, ch. xxxviii. note 136), Turner (*Hist. Anglo-Sax.*, c. viii.) and Vertot (*Histoire Critique de l'Etablissement des Bretons dans les Gaules*), is as follows:—When Maximus, in the year 383, was chosen emperor by the revolted legions of Britain, and passed over into Gaul to dethrone Gratian, who then shared the Western empire with his younger brother

Valentinian II., he took with him a considerable force of native Britons. Thus much is admitted on all hands; it is the following part which is disputed. The commander of these auxiliaries was Conan, a British prince. Maximus landed with his troops near the mouth of the Rance, defeated with great slaughter the army of Gratian at Aleth, now Quidallet, near St. Servan, took Rennes and Nantes, distributed lands to his companions in arms, and bestowed the government of Armorica upon Conan, whom he sent back from Paris, to which city he had advanced, to take possession of his government. Upon the defeat of Maximus by Theodosius the Great (A.D. 388), many of his soldiers took refuge with Conan, who managed to retain the government which he had received from the usurper, and even assumed the title of king. When the further decay of the empire left the remoter provs. in the possession of independence, the Armoricans were released from the subjection in which they had been held; and in the year 419 the Romans recognized as their allies those who had lately been their subjects. Conan appears to have ruled his states in peace and with considerable ability till the year 421, when he died. He is usually designated Conan *Meriadec*, the latter name signifying, according to some, 'great king.' His successors are said to have borne the title of king till the time of Alain II., in the 7th century, and were engaged in various wars with the Romans, or with the barbarous nations, Franks, Alans, and others, who had obtained settlements in Gaul. Their dominions, though the extent of them fluctuated with circumstances, were for the most part coincident or nearly so with the modern Bretagne.

In opposition to this history there are writers who deny that any immigration of the insular Britons into Armorica took place until the commencement of the 6th century, when the pressure of the Saxons forced the unhappy islanders to abandon their native seats and retire, some to the western side of the isl., Cornwall, Wales, &c., and others beyond sea into Armorica. These writers also assert the conquest of Armorica by Clovis; and they cite triumphantly a passage of Gregory of Tours, the earliest of the French historians, who says,—'Semper Britanni sub Francorum potestate post obitum regis Clodovei fuerunt, et comites non reges appellati sunt.' 'The Britons have been always under the power of the Franks since the death of the king Clovis, and have been called counts, not kings.' (Greg. Tur., l. iv. c. 4, quoted by Vertot and Daru.) But this passage of Gregory when carefully examined will rather countenance the supposition of the earlier settlement of the Britons, and of their previous independence under kings of their own; for the limiting expression, 'since the death of the king Clovis,' intimates that antecedently they were independent of the Franks, which is hardly probable if they landed as fugitives only a few years before the death of Clovis, which occurred in 511;* and the notice, that since the same epoch their chiefs had been 'counts, not kings,' is an intimation that before that date they had possessed the regal dignity. The whole passage, although it does not fully bear out the statements of the Breton writers, is by no means consistent with the representations of Vertot and other historians in what may be called the French interest.

If amidst these conflicting statements we may venture to give our own conjecture, we should say that the account given by Daru, though perhaps a distorted representation of facts, is not without foundation. It is likely that the British troops, who had followed Maximus into Gaul in 383, were settled by that usurper in Armorica, and were allowed, by the generosity or policy of Theodosius, to retain their lands after the defeat of Maximus. A colony of this kind was much more likely to influence the language and customs of the district in which they settled, than a number of miserable exiles escaping from the pressure of barbarian invaders, and finding their way as they could to a place of refuge in a foreign land. This infusion of a military population serves also to account for the rise of a free state in Armorica, upon the decay of the Roman power, while the rest of Gaul tamely bowed to the yoke either of their Roman masters or their barbarian invaders. The reality of Conan's existence we see no just reason to doubt; and without placing implicit credence in the lists which the Breton writers furnish, we are led by the language of

Gregory of Tours, and by other testimony brought forward by Daru, to admit that several succeeding chieftains, and perhaps Conan himself, took the title of king. The express testimony of Gregory must be admitted as sufficient to establish the subjection of Bretagne to Clovis, though it is likely that it was not incorporated with the kingdom of the Franks, and that it retained its laws and even its native princes, though with a subordinate title.

There seems reason to think that in the confusion which marked the continuance of the Merovingian dynasty, the Bretons recovered a precarious independence, and their princes re-assumed the title of kings, though their dominions and authority were contracted by the usurpation of the nobles.* This has probably led to the supposition that the regal dignity was never in abeyance. With Alain II. A.D. 690, as noticed above, the title ceased; and Bretagne divided into a number of principalities, became again subject to the Franks, about A.D. 800, during the reign of Charlemagne, whose predecessors had probably made many encroachments. In the troubles of the following period the kingdom of Bretagne was once more revived by Nomenoé (A.D. 824-851), who had been nominated governor of Vannes, by Louis le Debonnaire, son and successor of Charlemagne, and had revolted from Charles le Chauve. Erispoe, the son of Nomenoé, A.D. 851-857, acknowledged the supremacy of Charles, but maintained his kingly title. Civil dissensions among the Bretons themselves led to the extinction of this kingdom, A.D. 874. The country was divided into the counties of Rennes, Vannes, Cornouaille (Cornwall), and other portions; and civil discord between the rulers of the petty states thus formed conspired with the invasion of the Northmen or Normans to afflict the country. The kings of France claimed too a kind of sovereignty over the kings or other rulers of Bretagne, similar perhaps to those which the kings of England claimed over the princes of Scotland and Wales; but it is uncertain if this right extended over the whole of Bretagne or over a part only. This right of sovereignty was conveyed to the Northmen by Charles the Simple, when he ceded to them the country afterwards known as Normandie, A.D. 912. The dukes of Normandie thus became the feudal superiors of the rulers of Bretagne, and themselves did homage for this province as well as for Normandie to the kings of France. The cession was the cause of long and bloody wars between the people of the two provinces, for the Bretons struggled fiercely against the barbarians, to whose supremacy they were then arbitrarily consigned. They seem however at last to have acknowledged the dukes of Normandie as suzerains.

The following periods present little else than a confused series of wars, assassinations, and other violences perpetrated by the turbulent nobles among whom Bretagne was divided, aided by the neighbouring chiefs, the counts of Anjou and the dukes of Normandie. In 992, Geoffroy, count of Rennes, assumed the title of duke of Bretagne. Alain, his son, second duke of Bretagne, was, from the year 1035 to his death in 1040, the faithful guardian of the childhood of William *the Bastard* (afterwards *the Conqueror*), duke of Normandie. Several Breton lords accompanied William into England, A.D. 1066: one of these, Alan, count of Penthievre, built the castle and town of Richemont on the Swale, in Yorkshire, on the lands granted him by the Conqueror: this grant gave to a junior branch of the reigning house of Bretagne, at a period long subsequent to the title of Count of Richemont. Yet the Saxon nobles, who fled from England on the conquest of that island by the Normans, found an asylum with the then reigning duke of Bretagne. Alarmed by the progress of the Norman power, the kings of France and the dukes of Bretagne naturally formed an alliance for their mutual support. Alain Fergent, duke of Bretagne, obtained some advantage

* Possibly their independence was never recognized by the Franks: words of Eginhard, son-in-law and chancellor of Charlemagne, are—'Ipsius, a regibus Francorum subactus ac tributarius factus, imperatoris vectigal licet invidiosus solum solumbat.'—Ann. Eginhard., ad ann. 786, quoted by Vertot, vol. l. p. 46. 'This people,' he refers to the Bretons who had, according to his account, settled in Gaul on the invasion of Britain by the Saxons, 'having been subdued by the kings of the Franks, and rendered tributary, though unwillingly, the tribute imposed upon them.' It may be served here, that the terms 'subactus' and 'tributarius factus' imply the previous independence of these Bretons, a fact hardly consistent with the settlement for the first time in the reign or after the death of Clovis, and subjugation by that prince or his immediate successors. Eginhard's expression 'licet invidiosus' also implies a disposition, and indeed an agreement, to withdraw themselves from the yoke. All the evidence leads us to believe that the Bretons, whether under regal government or not, paid tribute to the strong Frankish government obliged them to it, but refused it when the Franks were weakened by division, civil discord, or other causes.

• Some ancient chronicles place the flight of those Britons into Armorica, who were expelled by the Saxons, after the death of Clovis (see Vertot, vol. l. p. 86), which is likely enough, for the pressure of the Saxons could hardly have been very great before that time. If so, the Britanni of Gregory of Tours must have been some who had settled at an earlier period.

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CAPE BRETON.]

R, the son of a peasant, was born
in the neighbourhood of Breda. He
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Italy, he fixed his residence at Antwerp,
into the academy of that city in 1551.
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married, but for a habit she had of lying;
eased him, that he transferred his affections
er of his old master, now dead, and obtained
on condition of residing at Brussels, where she
e painting a view on the canal which commu-
the Scheldt, by order of the magistrates of
was seized with his last illness. As he lay on

A second attack upon Hennebon marked the year 1342. Before the end of the year the countess of Montfort crossed the sea into England to beg further succours, and was returning with a fleet of 46 vessels, when near Guernsey she fell in with a French fleet of 22 great ships manned with Genoese seamen, and having on board 1000 men at arms under the orders of Charles de Blois himself. The battle was terminated by a tempest which separated the fleets, but four English ships were taken. The countess landed with her reinforcements, and the kings of England and France arrived in Bretagne with hostile forces; but early in the year 1343 a suspension of arms between the two potentates was agreed on, and the Bretons alone, with some mercenaries, were left to carry on the war. In 1344 the Montfort party was strengthened by the severity of the king of France, who, without form of trial, put to death a Breton lord, Olivier de Clisson, on a charge of traitorously forming an alliance with England. The widow of Clisson, on hearing of this, gathered some troops, surprised a castle held by the friends of Charles de Blois, and distinguished herself by her exploits in a war in which, more than in any other, women emulated the warlike fame and courage of men.

In 1345 Jean de Montfort managed to escape from the Louvre, after a confinement of three years. He landed in England, did homage to Edward as his suzerain, obtained aid and returned to Bretagne. He died however shortly after, and the rights of his son, a mere child, were bravely sustained by the Countess Jeanne.

In 1347 Charles de Blois, who had besieged Roche Dorrien near Treguier, was surprised and taken prisoner by an inferior body of English troops. His wife, Jeanne de Penthièvre, sustained his cause with a valour equal to that of the countess of Montfort, and the hatred of the Bretons for the English induced many of them to embrace her party. In 1356 Charles recovered his liberty by ransom, and renewed the war, which was carried on for seven years longer, during which no decisive action took place. In 1363 the young count de Montfort attained his majority, and did homage for the duchy of Bretagne to his powerful protector the king of England. In 1363 Charles de Blois and Jean de Montfort signed a treaty by which Bretagne was to be divided into two parts, having Rennes and Nantes for their respective capitals; but the reproaches of his wife, Jeanne de Penthièvre, who told him that she had married him to defend her inheritance, not to yield up half of it, determined Charles to break it. The following year witnessed the decisive battle of Aurai, in which Montfort, Chandos, and Olivier de Clisson overthrew the army of Charles de Blois, though he was aided by the bravery and skill of the celebrated Bertrand Duguesclin. Charles de Blois himself fell in the action, and the treaty of Guerande in 1365 secured the duchy of Bretagne to the house of Montfort.

Although Jean de Montfort (Jean IV.) had no competitor for the duchy, his possession of it was neither quiet nor uninterrupted. His own violent disposition precluded repose. The course pointed out to him by the gratitude due to England for past services and his present duty of fidelity to France was neutrality; but the duke went beyond this: he formed an alliance with the English, which necessarily drew down upon him the hostility of France, while his liberality to the English individually disgusted the barons, and the admission of English garrisons alienated the towns of his duchy. He quarrelled with Clisson, who soon after left his service for that of the French king. A French army under Duguesclin, now constable of France, himself a Breton, entered Bretagne (A.D. 1370), and the duke, abandoned by his subjects, was obliged to take refuge in England. In 1373 he returned, but not finding any support, again retired to England. The ambition of Charles V. of France brought about his restoration: that prince procured the confiscation of the duchy (A.D. 1378) by a sentence of the court of peers, and violated all the forms of such proceedings in his manner of conducting the process. He further seized upon the duchy himself instead of transferring it to the next heirs, and attempted to establish the *Gabelle* or salt tax. This violation of their independence aroused the Bretons; the duke, lately the object of general dislike, was recalled and received with the warmest affection (A.D. 1380). He might however soon have incurred another expulsion through his unwise partiality for the English, but Charles V., who might have taken advantage of the discontent of the Bretons, was dead; and Jean made peace with the government of his successor, yet a minor,

in a treaty in which he stipulated to give aid to the French in the war against the English. Against the conditions of this treaty he made however a private yet formal protest (A.D. 1381). The next trouble in which Jean involved himself was a dispute with the priesthood. He then renewed his quarrel with Clisson, now constable of France, whom he trepanned basely under the pretence of friendship, and would have put to death (A.D. 1387). He is also strongly suspected of having instigated Pierre de Craon to attempt the assassination of the constable in the streets of Paris (A.D. 1392). The influence of Clisson, who was wounded, though not mortally in the attempt, would probably have led the young King Charles VI. to make war on the duke, had not the insanity of the king interrupted the design. Clisson himself waged war against the duke: the contest was furious, and lasted till A.D. 1395, when peace was concluded. Jean de Montfort died A.D. 1399.

Jean V., son of the late duke, came to the duchy a minor. He had been married while yet a child to a daughter of the French King Charles VI., and upon attaining his majority was involved in that perplexed scene of disturbance which marked the reign of the unhappy maniac. It would be needless to follow him through the various changes of party, from Armagnac to Bourguignon, from French to English, to which unsteadiness or perfidy led him, by which however he preserved Bretagne from war until the year 1425-26, when it was partly ravaged by the duke of Bedford, regent of France for the English party, who was enraged at Jean for having deserted the English interest for that of the Dauphin. Bretagne derived some advantage from this war, by the settlement of many families who left other parts of France to take refuge in this more secure country, and the acquisition of the cloth manufacture which was brought by some Norman emigrants. Two other incidents mark the reign of this duke. In 1420 he was ensnared and taken prisoner by the count of Penthièvre and his brothers, princes of the house of Blois, grandsons of that Clisson who had himself been entrapped in a similar manner by the late duke. Jean obtained however his release, and the event led in its consequences to the ruin of the house of Blois. In 1440 Gilles de Laval, Maréchal de Retz, a principal Breton lord, was condemned for sorcery and selling himself to the devil. Reduced by prodigality to ruin he had sought to recover wealth by alchemy and sorcery. He was reproached with the murder of many wives whom he had successively married, and of more than a hundred children. He was burned alive in the presence of the duke near Nantes. In the year 1442 Jean V. died.

Jean V. was succeeded by his son, François I. Gilles, younger brother of this prince, having quarrelled with him on the ground of the insufficiency of his inheritance, attempted to call in the English. The duke procured the aid of some French troops, by whom his brother was seized. He wished to bring him to trial before the states of Bretagne, but not succeeding, he at last had him smothered in prison after a captivity of nearly four years, A.D. 1444. When the death of Gilles became known, a cordelier, who had been his confessor, presented himself before the duke, and in an awful voice summoned him, on behalf of the dead prince, to appear forty days afterwards before the tribunal of God. The impression made by this prophecy led to its fulfilment; the duke died on the very day foretold, July 1450. The history of his successors, Pierre II. and Artur III., presents no points of interest, save that Pierre, who was brother of François I. and of Gilles, caused the murderers of the latter to be put to death, except Artur de Montauban, contriver of the murder, who became a monk, and died archbishop of Bordeaux; and that Artur III., who, as count of Richemont (Richmond), had served with distinction in the French army, and had become constable of France, distinguished himself by his zeal against sorcerers. 'Never man,' says his historian, 'hated more bitterly all heresies, and sorcerers and sorceresses than he did; and clearly this appeared, for he caused more of them to be burned in France, in Poitou, and in Bretagne than any one else of his day.' Pierre II. held the duchy from 1450 to 1457; Arthur III. from 1457 to 1458.

The first part of the long ducal reign of François II. (1458—1488) coincided with the reign of the astute Louis XI., whose desire of repressing the enormous power of the great feudal nobles led him into frequent disputes and contests. In 1465 François entered into the confederacy of the nobles against the king, known by the title of 'The

league of the public good' (*Ligue du bien public*). The Bretons were too slow in their movements to take part in the battle of Monthéry, but they assisted in the blockade of Paris, and took Pontoise and Evreux. The duke received several concessions from the king in the treaty of St. Maur which Louis was obliged to sign. The troubles of France did not cease with this treaty; hostilities and intrigues continued, and François distinguished himself by the facility with which he changed sides. This duke was of a very feeble character, being ruled by his mistress Antoinette de Magnelais, lady of Villequier; by his favourite the lord of Lescun; and by his minister Landois, the son of a tailor at Vitré. This last, a man of considerable talent and boldness, provoked, as might be expected, the hatred of the nobility of Bretagne, who at last rose in revolt; and the duke was obliged, by the defection of his forces, to give up the object of their hatred to his enemies, A.D. 1484 or 85. Landois was forthwith tried on many charges, condemned, and hung. In 1486 François allied himself with Maximilian, king of the Romans, who had married the heiress (since dead) of the late duke of Bourgogne; with the king and queen of Navarre; the dukes of Lorraine, Orléans (heir presumptive to the throne of France, and afterwards Louis XII.), Foix, and others, for mutual protection and support against the court of France, which was now directed by Anne, Lady of Beaujeu, daughter of Louis XI., and guardian of her young brother the King Charles VIII. This led in 1487 to the invasion of Bretagne by the French. Henry VII. of England, who had in his adversity resided for some time in Bretagne, did not interfere in time: the occasion seemed favourable for annexing Bretagne to France, the king of which country laid claim to the duchy, by virtue of the rights of the house of Blois, which Louis XI. had long since purchased. Nantes was attacked; but the invaders were repulsed. In 1488 a battle was fought at St. Aubin de Cormier between the French army under La Tremouille and the Bretons and their allies, English, Germans, Gascons, and Spaniards: the latter were defeated with loss, and the duke of Orléans was taken prisoner on the field. A treaty was however agreed upon, and François died just after its conclusion, the 7th or 9th Sept. 1488.

Anne, daughter of the late duke, succeeded to the duchy. Her situation was embarrassing and painful. The *maréchal de Rieux*, her guardian, and other powerful persons at the court, wished her to marry the Sire d'Albret, a Gascon noble, to whom she was exceedingly averse. Some English and Spanish auxiliaries arrived to defend her against the hostile designs of France, but she feared that the English would make themselves masters of her person, and compel her to marry the Sire d'Albret. To put an end to these intrigues and annoyances, she gave her hand to the Archduke Maximilian, to whom she was married by proxy in 1489. The French wished to dissolve the marriage, which indeed was never consummated; and in the year 1490 hostilities recommenced between France and Bretagne. The Sire d'Albret, piqued at his rejection by the young duchess, put into their hands the important town of Nantes, which he had surprised; and the duchess herself was besieged in Rennes, and reduced to the necessity of negotiating. During the negotiations a proposal was made on the part of the French, listened to by the Breton leaders, and finally carried into effect, that the duchess and the young king of France, Charles VIII., should reconcile their discordant claims by marrying. The difficulties of the project seemed great: Anne was already married by proxy to Maximilian, and Charles was engaged to marry the same prince's daughter, who had been sent to France, being yet under the marriageable age. These difficulties were broken through; the young archduchess was sent home, Charles and Anne were married, and a dispensation from the pope then solicited and obtained. This marriage took place A.D. 1491; and by the terms of it the rights of whichever party died first were to go to the survivor, in default of lawful issue. The duchess was bound also, if she survived, to marry only the future king of France or the heir presumptive, so that the final union of the duchy with the crown was apparently secured.

In 1498, Charles VIII. died without children; and in 1499, nine months after his decease, Anne married his successor, Louis XII., who had cleared the way for this marriage by unjustly and perfidiously divorcing his former wife Jeanne, daughter of Louis XI., though she had never abandoned him in his troubles. The articles of marriage between Anne

and the new king were designed to separate the crown of France from the ducal coronet of Bretagne, by providing that the latter should descend to the second son, or in default of a second son, to a daughter, so as to give to the province a sovereign of its own. They had only two children, daughters; the elder was promised in marriage to a young prince of the house of Austria, afterwards celebrated as the emperor Charles V., and was to have, as her dower, Bretagne, Bourgogne, the county of Blois, and several possessions in Italy. Considerations of a public nature however set aside the marriage; and Louis, to prevent the dismemberment of the kingdom, broke the treaties in which it had been arranged. The duchess Anne died A.D. 1514, aged 37 years. Her daughter Claude was married a few months after to the duke d'Angoulême, heir presumptive to the French throne, which he ascended upon the death of Louis XII. in 1515, under the title of François I.; and shortly afterwards Claude ceded to her husband her rights over Bretagne during her lifetime. It was not however till several years after her death, which was in 1524, that Bretagne was formally united to France: this union took place in 1532. It was however little more than prospective; for Claude had bequeathed the duchy to her son the dauphin, who was recognized as sovereign of the country; but the act of union provided that it should be irrevocably united to the French crown.

We might here terminate our sketch of the history of Bretagne; but the events which occurred during the religious wars of the sixteenth century claim some notice. Notwithstanding the act of union, subsequent claimants to the duchy appeared in the husbands of two of the granddaughters of François I., king of France; and in the duke of Mercœur, a branch of the powerful and ambitious house of Lorraine, who claimed to represent the antient though now almost obsolete claims of the houses of Blois and Penthièvre. The duke had been imprudently nominated by Henry III. governor of the province, and he took advantage of his position to raise forces at once to support 'the league,' and to sustain his own pretensions. Upon the assassination of the duke of Guise, Mercœur broke out into open revolt (about 1588); Nantes declared in his favour; Rennes was seized by his partisans, but recovered by the inhabitants; the greater part of the province was in his power; and the count of Soissons, who was sent to supersede him in the government, was taken prisoner by him on his road. He openly asserted his claims, and war was carried on with activity between him and the prince of Dombes, who commanded the royalists. A body of Spaniards landed to support the duke; a body of English came to the aid of the royalists. Lower Bretagne was devastated by partisan corps; and the war was only concluded by the approach of Henry IV., with whom Mercœur, through the intercession of Gabrielle d'Estrées, the king's mistress, made an advantageous treaty, receiving considerable sums of money and other benefits, and resigning both his government and his claims to the duchy. It was in this expedition to Bretagne that Henry issued the celebrated edict of Nantes, 13th April, 1598.

From this time the history of Bretagne ceases to possess any importance. It became completely a province of France, and the traces of its separate existence (except always the prevalence of the Breton language), which diminished during the monarchy, have been quite obliterated in the new arrangements induced by the French Revolution. (Daru, *Histoire de Bretagne*.)

BRETON, CAPE. [CAPE BRETON.]

BREUGHEL, PETER, the son of a peasant, was born at Breughel, a village in the neighbourhood of Breda. He was placed under Peter Koek of Aalst (Alost), whose daughter he subsequently married. Having learned painting under that master, he travelled into France and Italy. He took many views by the way, particularly among the Alps.

Returning from Italy, he fixed his residence at Antwerp, and was admitted into the academy of that city in 1551. Here he lived for a long time with a mistress, whom he would have married, but for a habit she had of lying; which so displeased him, that he transferred his affections to the daughter of his old master, now dead, and obtained her hand upon condition of residing at Brussels, where she lived. While painting a view on the canal which communicates with the Scheldt, by order of the magistrates of Brussels, he was seized with his last illness. As he lay on

his death-bed, he ordered many of his paintings, which were either satirical or licentious, to be brought before him, and made his wife burn them in his presence. The dates of his birth and death are unknown.

He painted chiefly comic subjects, after the manner of Jerome Bosche, whom he excelled; and he has been considered by many inferior to Teniers alone in that branch of art. His composition has been objected to; but his drawing is correct and spirited, though not very highly finished. It was his frequent custom to disguise himself and mix with the peasantry, at their festivals and games; and the happiness with which he transferred the living actions he thus witnessed to the canvass has been aptly compared to Moliere's, though in a different kind of satire. Besides comic subjects, he painted landscapes, and a few historical pictures. Two sons survived him, John and Peter.

BREUGHEL, JOHN, was born at Brussels, about 1589. According to some accounts he lost his father very young, and was brought up by his grandmother, the widow of Peter Koek, from whom he learned to paint in distemper, and afterwards studied oil-painting under an artist named Goekindt. The most probable account is, that he received the first principles of his art from his father, and the internal evidence of his works tends to confirm the latter opinion. For some time he confined himself to flower painting; but travelling into Italy, he enlarged his style, and painted landscapes, which he adorned with small figures, executed with exquisite correctness and beauty. Many painters availed themselves of his liberality, and induced him to enrich their pictures with his beautiful little figures or landscapes; among them are Steenwick, Van Baelen, Rotenhamer, Momper, &c. Even Rubens made use of his skill in more than one picture, in which Rubens painted the figures, and Breughel the landscapes, flowers, animals, and even insects.

John Breughel was extremely industrious, as the great number of his pictures, and the care with which they are finished, sufficiently attests. Growing rich by his industry, he cultivated a magnificence in his apparel, and was nicknamed Velvet Breughel, from the material of his dress, which was a costly stuff. His touch is light and spirited, his drawing correct, and his finish elaborate. His pictures are much admired; although his landscapes are injured by an exaggerated blueness in the distances. The time of his death is unknown to the Flemish authors; M. Felibien conjectures it to have been about 1642.

PETER, the other son of Peter Breughel, the elder, was the pupil of Giles Coningsloo. From the diabolical nature of his favourite subjects he has been surnamed Hellish. He did not attain the eminence either of his father or brother.

BREVE, in music, a note double the length of a semibreve, and thus formed, $\parallel \bigcirc \parallel$, or $\parallel \equiv \parallel$. The *breve* (from *brevis*, short), which in duration takes twice the time of the longest note now in ordinary use, was a short, brief note, three centuries ago, as the term clearly proves. Musicians have proceeded by degrees till the quarter-demisemiquaver is become our *minimum*, being $\frac{1}{16}$ of the *breve*. Indeed some have gone so far as to introduce the half-quarter-demisemiquaver; and among those who have been guilty of so monstrous an absurdity, we regret to mention the name of Beethoven.

BREVET, in France, denotes any warrant granted by the sovereign to an individual in order to entitle him to perform the duty to which it refers. In the British service, the term is applied to a commission conferring on an officer a degree of rank immediately above that which he holds in his particular regiment; without, however, conveying a power to receive the corresponding pay. Brevet rank does not exist in the royal navy, and in the army it neither descends lower than that of captain, nor ascends above that of lieutenant-colonel. It is given as the reward of some particular service which may not be of so important a nature as to deserve an immediate appointment to the full rank: it however qualifies the officer to succeed to that rank on a vacancy occurring, in preference to one not holding such brevet, and whose regimental rank is the same as his own.

In the fifteenth section of the Articles of War it is stated that an officer having a brevet commission, while serving in courts-martial formed of officers drawn from different regiments, or when in garrison, or when joined to a detachment composed of different corps, takes precedence according to the rank given him in his brevet, or according to the date of

any former commission; but while serving on courts-martial, or with a detachment composed only of his own regiment, he does duty and takes rank according to the date of his commission in that regiment. Brevet rank, therefore, is to be considered effectual for every military purpose in the army generally, but of no avail in the regiment to which the officer holding it belongs, unless it be wholly or in part united for a temporary purpose with some other corps. (See Samuel's *Historical Account of the British Army*, p. 615.)

Something similar to the brevet rank above described must have existed in the French service under the old monarchy, for, according to Père Daniel (tom. ii. p. 217 and 227), the colonel-general of the Swiss troops had the power of nominating subaltern officers to the rank of captains by a certificate, which enabled them to hold that rank without the regular commission. The same author states also that if any captain transferred himself from one regiment to another, whatever might be the date of his commission, he was placed at the bottom of the list in the regiment which he entered, without, however, losing his right of seniority when employed in a detachment composed of troops drawn from several different regiments.

The introduction of brevet rank into the British army, as well as that of the half-pay allowance to officers on retiring from regimental duty, probably took place soon after the revolution in 1688. But the practice of granting, when officers from different regiments are united for particular purposes, a nominal rank higher than that which is actually held, appears to have been of older date; for in the *Soldier's Grammar*, which was written in the time of James the First, it is stated that the lieutenants of colonels are captains by courtesy, and may sit in a court of war (court-martial) as junior captains of the regiments in which they command (Grose, *Military Antiquities*, vol. ii.) It was originally supposed that both officers holding commissions by brevet and those on half-pay were subject to military law; but, in 1743, when the inclusion of half-pay officers within the sphere of its control was objected to as an unnecessary extension of that law, the clause referring to them in the Mutiny Act was omitted, and it has never since been inserted. In 1786 it was decided in Parliament that brevet officers were subject to the Mutiny Act or Articles of War, but that half-pay officers were not. (Lord Woodhouselee, *Essay on Military Law*, p. 112.) Brevet command was frequently conferred on officers during the late war; but the cause no longer existing, the practice has declined, and at present there are very few officers in the service who hold that species of rank.

BREVIARIUM was used among the Roman writers to denote a book introduced by Augustus, containing the accounts of the empire, the enumeration of the military, &c. (Sueton. Aug. c. 28.) The design of this breviarium was to explain to the Roman people the manner in which the monies levied upon them were applied; not to the emperor's private use, but for public purposes. Tiberius laid aside the breviarium, but it was resumed by Caligula. (Sueton. Calig. c. 16.)

BREVIARY, or canonical hours, the name of the daily service-book of the church of Rome, consisting of the offices of matins, prime, third, sixth, nones, vespers, and the complines; that is, of seven hours, according with the saying of David, Ps. cxix. 164, 'Seven times a day do I praise thee.'

The origin of the name is variously accounted for: some deriving it from the little books of psalms and lessons read in the choir, collected out of large volumes, which the old monks carried with them in their journeys; others from the shortened service which was used in the papal palace of the Lateran, afterwards brought into general use. Grancolas, in his 'Commentarius Historicus in Romanum Breviarium,' 4to. Ven. 1734, says, 'Breviarium dictum est quasi Breve Orarium, sive Precum Epitome;' an explanation countenanced by the circumstance that the name of breviary is not older than the year 1080, adopted after the offices which it contains had been revised and contracted.

In earlier times the designations of this service-book had been 'Horæ Canonicæ,' 'Opus Del,' 'Divinum Officium,' 'Collecta,' 'Agenda,' 'Cursus,' &c. (Grancolas, *ut sup.* pp. 4, 5.)

The Breviary originally contained only the Lord's Prayer and Psalms, to which were subsequently added lessons from the Scriptures. Various additions were afterwards made by the popes Damasus, Leo, Gelasius, Gregory the Great,

Adrian I., Gregory III., and Gregory VII.; and in the progress of time, in compliance with the superstition of the day, the legendary lives of the saints were inserted, full of ill-attested and improbable facts. This gave occasion to many revisions and reformations of the Roman Breviary, particularly in the councils of Trent and Cologne, by popes Gregory IX., Nicholas III., Clement VII., Paul III., and Paul IV.; as likewise by some cardinals, and especially by Cardinal Quignon, who carried the reformation of it the farthest.

An additional reason for reforming the Breviary was found in the circumstance that different churches and orders of religious had their several offices, varying from each other, but still under the same name. Grancolas has separate chapters, de Ecclesiarum Orientalium Breviario—Distributio Officii apud Græcos—de veterum Occidentis Ecclesiarum, præcipue vero Mediolanensis Breviario—de Breviario Ecclesiarum Hispaniæ—Vetus Ecclesiæ Anglicanæ et Germanicæ Breviarius—de veteri Galliæ Ecclesiarum Breviario, præcipue vero Parisiensis—de Breviario Monastico, &c.

In England we have Breviaries more particularly appropriated to the cathedrals of York and Salisbury: an edition of the former, printed at York in 1526, is mentioned in Gough's 'British Topography'; editions of the latter, printed at Paris, occur in 1510 and 1536. The Breviary 'in usum Sarum,' was the service-book principally followed formerly in the English churches. But the variety of form, as already shown, was not confined to England; there was scarcely a church in the communion of Rome, in France, Flanders, Spain, Germany, &c., which had not something particular, however inconsiderable, in the form and manner of its Breviary.

Pope Pius V., who adopted the Breviary as decreed by the council of Trent, ordered all former Breviaries to be laid aside, by his rescript dated at Rome 7 id. July, 1568, whether made by bishops, orders of monks, or monasteries. Clement VIII., in another rescript dated 10th May, 1603, recognised Pius Vth's abolition of the Breviaries as used in different churches according to their particular forms of service, and confirmed the Breviary as fixed in 1568. Urban VIII. again confirmed it under a new revision 25th January, 1631. This last revision, by which the work was brought nearer to the simplicity of the primitive offices, is at present the Breviary of the Romish church in general use. It was published in 1697, under the direction of Ferdinand de Bergem, bishop of Antwerp, intitled 'Breviarium Romanum, ex decreto Sacro-sancti Concilii Tridentini restitutum, Pii V. Pont. Max. jussu editum et Clementis VIII. primam, nunc denuo Urbani PP. VIII. autoritate recognitum,' fol. Antw. 1697.

The obligation of reading the Breviary every day, which at first was universal, was by degrees limited to the benefited clergy alone, who are bound to do it on pain of being guilty of mortal sin, and of refunding their revenues in proportion to their delinquencies in discharging this duty.

In addition to Grancolas's work already quoted, and the rescripts prefixed to the Breviary of 1697, the reader may consult Koecherid's 'Bibliotheca Theologia Symbolicæ et Catecheticæ, itemque Liturgicæ,' 8vo. Guelpherb., 1751, p. 747-768, where he will find a critical account of the editions of the Breviary since 1549.

BREWING consists in the process of extracting a saccharine solution from grain, and in converting that solution into a fermented and sound spirituous beverage called beer or ale. This art, although a perfectly chemical one in nearly all its stages, has not until very lately been indebted to chemistry for any of the improvements which have been made in its details. This we may attribute to the rare occurrence of a practical chemist being engaged in the operation of brewing. However, we find that within the last few years, and even the last few months, very great accessions have been made, more particularly by the continental chemists, to our knowledge of that primary and important operation in the process of brewing, the conversion of starch into sugar in the mash tun by the action of the newly-discovered principle called diastase.

This art is of great antiquity, for we find that the Germans, in the time of Tacitus, manufactured an intoxicating beverage from wheat and barley; and Herodotus (ii. 77), five centuries earlier, says that the Egyptians made a drink of barley. The Saxons also had various drinks of the same class; some made from grain, as mum;

others from honey, as metheglin; but in Germany, in particular, they were early famed for their beer and ale. The towns of Lubeck and Rostock stand foremost in the list for their double beer or Brunawick mum, as it was called, at which places it was manufactured to an enormous extent, the latter town exporting, about the end of the sixteenth century, as much as 800,000 barrels. Heavy duties were, however, levied in this country on these imports, amounting at last, in the beginning of the reign of Queen Anne, to the enormous sum of 15s. per barrel. This heavy impost, together with the improvement in the breweries of this country, soon put a stop to the introduction of this article. Within late years the manufacture of beer has increased to an amazing extent, and the following statement of the quantity of materials employed in London only, for one year, will enable the reader to judge of the scale on which these operations are now carried on. The excise returns of malt consumed by the metropolitan brewers, for the year ending October, 1835, was 5,620,264 bushels, or 702,633 quarters, which we may fairly calculate would require on the average at least 62,728 cwt. of hops, and yield about 2,800,000 barrels of beer.

The process usually followed by the brewer of the present day may be divided into eight distinct parts, independent of the mashing: namely, first, the grinding of the malt; secondly, the operation of mashing; thirdly, the boiling; fourthly, the cooling; fifthly, the fermentation; sixthly, the cleansing; seventhly, the racking or vatting; and eighthly, the fining or clearing. In considering these various subjects, it will be better first to go over the processes in their order, and then return to the particulars of the principal processes, as respects the heat and precautionary details, &c. In brewing the various beers, as ale, porter, and table-beer, three distinct kinds of malt are employed; the pale and amber malts, the brown or blown malt, and the roasted or black malt. The first of these alone is used for ales; and for the finer qualities or higher priced, the malt is dried very pale indeed. This first quality of grain gives the saccharine extract; the second, or blown malt, gives the flavour to porters and stouts; and the last variety is used only as a colouring in place of the essentia bina or burnt sugar, which used to be employed for the same purpose, but which is not permitted by the excise laws. The roasted malt is also sometimes called patent malt. As the manufacture of these varieties of malted grain is more properly considered under the article MALT, it will suffice for our present purpose to state that their peculiarities depend entirely upon the different heats to which they are exposed in drying.

The grain being selected, we arrive at the first stage of the operation, the grinding, which is conducted either by the common arrangement of millstones, or by allowing the malt to pass between two cylindrical iron rollers, placed horizontally at a certain distance from each other, with the space between them regulated by adjusting screws according to the size of the grist (crushed or cut malt) required. Many brewers prefer a fine grist, while others, on the contrary, consider that a greater extract can be obtained from a coarse one. Some parties use the millstones in preference to the rollers; others like the rollers best; others again employ both, using a circular sieve called a separator, through which the grist passes from the millstones, and only the grains that may have escaped this operation are carried to the rollers to be crushed.

The grist being thus prepared is now ready for the process of mashing. The mash tun or vessel in which this operation is carried on is usually of wood, varying in size according to the quantity of malt to be wetted, and having two or more holes called taps in the bottom. From one to two inches above this bottom is a false bottom or diaphragm pierced full of small holes, on which the ground malt is placed; the hot water is then admitted either above or between the true and false bottom of the mash tun, and the grist is now to be intimately mixed with the water. For this purpose it is either worked by machinery consisting of an horizontal axle supplied with vertical arms around its circumference, and these again having comb-like projections, the whole of which is made to traverse round the tun; or the *goods* (as the malt is now technically called) is worked up by means of instruments termed mashing cars, so as to cause the whole to assume a perfect homogeneous consistence. This being completed, the whole is allowed to stand at rest for a certain time, and the taps are then opened or set, as it is termed, at the bottom of the mash tun, and the

infusion or sweet wort is allowed to run off into a vessel called the underback, from whence it is pumped or otherwise conveyed to the copper for boiling. When the taps are spent, or when the goods have drained sufficiently so that very little wort runs from them, the taps are closed, and a fresh quantity of hot water is run on for a second mash. Brewing coppers for small breweries are generally open; but in the large establishments dome coppers are employed, and on the dome of the copper a vessel is constructed called a pan, by which both time and fuel are materially economised. Cold wort or water is placed in this vessel at the same time that the boiling is going on in the closed copper below, the steam from which is also driven into the pan, so that in the course of the time required for the wort to boil, the fluid in the pan is raised to the boiling temperature also. When the whole of the worts are pumped into the copper the hops are thrown in, and the boiling then commences. Large coppers are supplied with an apparatus called a rouser, consisting of a vertical rod of iron extending to the bottom of the copper, with chains pending from the horizontal arms which branch off from it, and which are dragged round the bottom by machinery so as to prevent the hops from settling down and burning. When the boiling is complete, the whole contents of the copper are turned into the hop back or jack back, which is a large square or oblong vessel of wood or iron, having a false bottom for large brewings, and a sieve partition at the corners for small ones.

As the boiled worts drain from the hops, they are allowed to run into or are pumped into the coolers. These hops, when sufficiently drained, may be again boiled with a second copper of wort, or with the return wort or table-beer. The coolers are large shallow vessels, placed in as open a part of the brewery as possible, so as to command a free current of air over the whole of their surface: they may be constructed of either wood or iron. The latter possesses many advantages from its cleanliness, and the exposure of a large radiating surface to assist the cooling. There are however many foolish prejudices against the use of iron coolers. Fans and blowers are sometimes used to assist the rapidity of this part of the process. The fans are placed in the middle of the cooler and whirl round, producing a considerable movement and current; but where the cooler is large, this whirling current only affects the surrounding steam, without causing any fresh admission of atmospheric air: whereas the blower, which is situated on the outside of the cooler, and has a wooden pipe with lateral openings extending directly across the wort, is continually forcing fresh and cold air over the surface. The blower consists of a light iron paddle-wheel working within a box closed at all parts, except round the axle of the wheel, at which the cold air enters, and at the opening of the wooden pipe through which it is expelled. When sufficiently cool, the worts are allowed to run into the fermenting tun. As great injury may arise from the worts remaining too long in the coolers, more particularly in summer, it becomes necessary to employ artificial means of cooling by refrigerators, the principle of which is this: a current of cold water flows through a main in one direction, while the hot wort is made to traverse in the opposite, either in an inclosed pipe within the liquor main, or around the exterior of the cooling surface. Various apparatus of this kind have been constructed, but those of Wheeler and Gregory, particularly the latter, are to be preferred from the facilities of cleaning them.

The next operation, that of fermentation, is carried on in a vessel called a gyle, or fermenting tun, which is either of a square or round shape: the latter is preferable on account of the superior cleanliness, the whole support being on the outside of the vessel in the hoops, while the square is braced together in the interior by means of knees and stays at the corners and bottom, and if of a larger size by two or three tiers of iron rods, or tiers which pass through the sides of the vessel, all of which are liable to become rusted, and accumulate bad yeast and dirt. As soon as the worts begin to run from the coolers, and when a sufficient quantity is in the tun, the yeast should be added, being first rendered thin by some of the wort, so as to be easily miscible when thrown into the remainder. When the fermentation has arrived at a certain point of attenuation, that is, when a certain quantity of the saccharine matter of the wort has been converted into alcohol or spirit, it is to be cleansed from the yeast; and for purpose it is either run into smaller vessels, such as rounds, or the yeasty head is skimmed off from

the top, and this is repeated at intervals until the beer is clean. This operation of skimming is generally confined to the cleansing of ales. The rounds or casks are simply filled with the fermenting beer, and so arranged as to be always kept quite full, with a trough or stillion to catch the yeast as it works out at the orifice of these vessels. Great care must be taken that these casks are carefully cleaned each time of using, particularly in the summer, when the yeast is so liable to become stale and putrid, and to taint the next brewing that may go into them. The beer, being thus cleansed from all the yeast, is now to be either racked directly into casks as for ale, or run into vats prepared for it. On the large scale a large vessel termed a tank is first used, into which the beer intended to be vatted is allowed to run so as to be perfectly well mixed, and also to deposit a further portion of yeast by standing. The beer is by this means also rendered flat, which is necessary for stock or store beer that is to be kept some time before coming into use.

The last operation the beer will have to undergo is the fining or clearing, which is sometimes done by the brewer, sometimes by the publican. The fining material consists of isinglass of various qualities, digested and dissolved in acid beer or sour, and their operation is supposed to be this:—the gelatine or the soluble matter of isinglass is more soluble in cold acid beer than in sound beer, water, or any fluid containing spirit, and therefore when the finings are added to a well-fermented beer, the gelatine is separated from the medium which held it in solution, and by its separation it agglutinates or collects together all the lighter floating matters which render the beer thick, and ultimately falls to the bottom of the vessel with them, leaving the beer clear and transparent.

The main thing to be observed in all the operations described is cleanliness, without which it is impossible that sound beer can be brewed, let the skill of the brewer be ever so great. Whenever a vessel of any kind is emptied, it should be washed directly with sweet liquor, either cold or hot. If the latter should be found necessary, this will insure the operator against failure from this score, and will also save a great deal of extra labour, if the dirt or yeast is not allowed to harden or become dry. The grist should be coarse cut, or, if crushed by rollers, should have the cut broken without destroying or breaking in pieces the grain: when this is done the taps will spend more freely, and a finer bright wort will be obtained; and if sparging or sprinkling the water over the goods should be adopted in the after operations instead of mashing, great advantage will arise from the facility with which the worts come down. The observations apply only to pale grists; for blown malt very fine grinding is desirable; and the roasted malt may be ground as fine as possible, so that it will pass the stones or rollers without caking. The temperatures of the mashing liquors for ale or pale grists may range from 170° of Fahrenheit to 185° according to the quantity of malt wetted, the heat increasing as the bulk of material is diminished, so that the tap heat, after the first ten minutes running, may average about 146°. For porter, where mixed grists are employed, the mashing heat should not range higher than 165°, nor lower than 156°, so that the tap may average 140°; if a second mash is made, the heat may be increased from 15 to 20 degrees: the proportion of liquor for the first mash may be from one and a half barrels to two barrels per quarter. The goods after mashing should be allowed to stand from one to two hours before setting the taps; but the after washes not more than half an hour. The length of time for the worts to boil should be about an hour and a half, or until the worts break bright from the hops, when a sample is taken from the copper. The proportion of hops to be used must depend so entirely on the beer in process of brewing, and the number of the boiled worts, that no certain rate can be laid down; but 4 lbs. of new hops per quarter of malt should be ample for present-use beers; for keeping-beers for exportation as much as 28 lbs. per quarter have been used, but this is the extreme limit. The next point on which it is necessary to enlarge is the fermentation, which is the most variable operation in the whole process of brewing. Hardly any two counties follow exactly the same routine, some using very low heats, others very high, some cleansing early, others late, some skimming off the head, others continually beating it in its stage, with a variety of other operations adopted at various stages of the process, give rise to the great variety of different-flavoured beers which we have in this country.

The temperatures for fermentation should range between 56° and 62°; not higher than 60° for ale worts, or above 62° for porter. The attenuation at cleansing will depend in a great measure upon the original gravity of the wort, and whether the beer is for present use or keeping; a very good criterion is about 2-5ths of the original saccharometric gravity for present-use ale, and 1-3rd for keeping-ale, for porter one-half for present-use beer, and 2-5ths for keeping. If the ale or porter be for exportation, these attenuations should be carried lower and the beer well flattened before bunging down in the casks or vating. The stages of a healthy fermentation are, first, a creamy scum rising on the surface: this, after a time, begins to curl and becomes frosted in appearance; it then becomes rocky, and the air vesicles which appeared frosted enlarge; it then passes to the size of small bladders, and after a short time the head begins to fall: it however rises again, becomes yeasty, the bladders enlarge in size, the yeastiness increases, and, when ready for cleansing, it has a vigorous, rich, yeasty brown and bladdery head. With respect to the yeast employed, great care should be taken to have it fresh, sound, and healthy, otherwise you will never insure a healthy fermentation; and if you have not such yeast by you, send by all means to some other brewers who are at work, and procure some. The yeast, after a time, will wear out and cease to ferment the worts healthily: under these circumstances a change must be procured, and at times one or two before you can get a change that will suit. The yeast used in setting the fermentation should be about 2 lbs. per barrel, but this will vary with the strength of the beer, the extent of attenuation required, and the quantity of worts that are to be fermented together. Good malt and hops are of course indispensable in all these operations, and good materials are at all times more economical than inferior articles bought a few shillings cheaper; a greater extract is obtained and a far superior article manufactured, to the credit of the brewer and the interest of the employer. With respect to the water, this is not a matter of so much consequence as has been often supposed, provided it is sweet in itself, that is, independently of floating matter. Many persons imagine that the peculiarity of the water in different districts produces the difference in the flavour of the beer brewed, but this is entirely erroneous: good beer may be brewed from hard or from soft water, whether obtained from a well or a river.

BREWING STATISTICS. Beer was first made an excisable article by the parliament in the 19th of Charles I., A.D. 1643. In December, 1660, persons by whom it was brewed for sale were required to pay an excise of 2s. 6d. per barrel on strong beer, and 6d. per barrel on small beer. In the following year the same duties were respectively imposed upon strong and small beer in Ireland; but beer brewed in Scotland was not chargeable with any duty until 1695, when the brewers paid 3s. 3d. per barrel on strong beer, 9d. per barrel on small beer (to which rates the duties in England had been advanced in 1692), and 2s. per barrel upon 'twopenny ale.' In 1697 the rates were increased in England and Scotland to 4s. 9d. on strong beer, and 1s. 3d. on small beer. A further advance in 1710 carried the rates to 5s., and 1s. 4d. In 1761 the duties were fixed at 8s. per barrel on strong, 3s. on table beer, 1s. 4d. on small beer, and 3s. 4d. on twopenny ale. In 1802 the distinctions of small beer in England and Scotland, and of twopenny ale in the latter country, were no longer made, and the rates of duty were fixed at 10s. per barrel on strong, and 2s. per barrel on table-beer, at which they were continued until October, 1830, when the duty on all kinds of beer was wholly repealed. In July, 1823, the legislature had sanctioned the sale of a quality of beer between the two kinds last mentioned, to which the appropriate name of 'intermediate' beer was given, and upon this kind a duty of 5s. per barrel was payable, until 1830.

The rates of duty in Ireland underwent the following alterations:—

	Strong Beer.	Small Beer.
December, 1661	2s. 6d.	6d. per barrel.
November, 1715	4s. 0d.	9d. "
November, 1717	4s. 6d.	10d. "
December, 1769	4s. 1d.	9d. "
March, 1791	2s. 6d.	10d. "
March, 1794	2s. 1½d.	9d. "
March, 1795,	the duty in Ireland ceased.	

The foregoing rates were in addition to the duties charged in each division of the kingdom upon the materials of which beer is made. [Hops and MALT.]

An attempt was made in 1806 to impose duty upon beer made in private houses, but this measure met with so much opposition, that it was abandoned by the chancellor of the exchequer, and the impost was confined, as it always had been, to beer brewed for sale by public brewers.

The quantities charged, and the gross amount of duty collected, in each of the three divisions of the kingdom at different periods since 1786, until the year preceding the repeal of the tax, were as follows:—

ENGLAND.	Strong Beer.		Table Beer.		Small Beer.		Amount of Duty.
	Barrels.	Rate of Duty.	Barrels.	Rate of Duty.	Barrels.	Rate of Duty.	
1786	4,486,482	8s.	485,690	3s.	1,343,201	1s. 4d.	1,832,922
1790	4,623,359	"	546,950	"	1,289,157	"	1,977,796
1795	5,037,804	"	576,454	"	1,453,026	"	2,136,460
1800	4,834,305	"	574,935	"	1,360,503	"	2,106,671
1805	5,413,131	10s.	1,776,807	3s.	"	"	2,859,746
1810	5,753,219	"	1,635,568	"	"	"	3,046,218
1815	6,150,544	"	1,519,303	"	"	"	3,227,103
1820	5,236,701	"	1,444,300	"	Intermediate.	"	2,733,779
1825	6,500,664	"	1,485,790	"	5,559	5s.	3,461,236
1829	5,949,396	"	1,380,457	"	55,496	"	3,136,568

SCOTLAND.	Strong Beer.		Twopenny Ale.		Table Beer.		Small Beer.		Amount of Duty.
	Barrels.	Rate of Duty.	Barrels.	Rate of Duty.	Barrels.	Rate of Duty.	Barrels.	Rate of Duty.	
1786	24,074	8s.	113,944	3s. 4d.	"	"	107,517	1s. 4d.	26,991
1790	43,628	"	121,962	"	"	"	125,938	"	46,665
1795	39,696	"	133,653	"	"	"	165,747	"	49,639
1800	74,967	"	149,803	"	"	"	160,513	"	65,993
1805	104,534	10s.	"	"	221,439	3s.	"	"	74,490
1810	125,806	"	"	"	227,457	"	"	"	86,152
1815	135,809	"	"	"	221,697	"	"	"	93,133
1820	116,299	"	"	"	207,010	"	"	"	78,856
1825	123,706	"	"	"	243,523	"	"	"	84,206
1829	110,952	"	"	"	239,356	"	"	"	79,414

IRELAND.	Ale.		Small Beer.		Amount of Duty.
	Barrels.	Rate of Duty.	Barrels.	Rate of Duty.	
1786	395,087	4s. 6d.	174,032	10d.	96,145
1790	434,397	"	203,182	"	106,305
1795	521,822	2s. 1½d.	161,966	9d.	61,518

Beer or ale of all sorts, made in foreign countries; is liable to a duty on importation of 53s. per barrel, which amounts to a total prohibition.

The exportation of beer from this kingdom is very inconsiderable when compared with the quantity consumed. The shipments during the five years from 1830 to 1834 were:—

	Tons.	Value.
1830	10,212	£212,564
1831	8,844	161,768
1832	11,330	204,001
1833	11,629	206,935
1834	10,406	186,321

Nearly three-fourths of the shipments are made to British colonies and possessions. Of this proportion India takes one-fourth; an equal quantity is sent to the British North American colonies and the West Indies; the remaining one-fourth is divided between our Australasian and African settlements. Of foreign countries, the United States of America, Russia, and France are the best customers for this article; the remaining shipments are small in amount.

BREWED. [STAFFORDSHIRE.]

BRIAN, surnamed **BOROMHE (BORU)**, a celebrated king of Ireland, son of Kennedy, king of Munster, son of Lorcan. He ascended the throne of both Munsters, *i. e.*, of Ormond and Thomond, or the present counties of Tipperary and Clare, A.D. 978. His earlier exploits were against the Danes of Limerick and Waterford; but being elated by frequent successes against these invaders, he deposed O'Maelachghlin, the supreme king of the island, and eventually became himself monarch of Ireland. He derived his surname from the tribute which he now imposed upon the provinces. The *Boromhe*, or tax alluded to, was levied in the following proportions:—from Connaught, 800 hogs; from Tyrconnell (the present county of Donegal), 500 mantles and 500 cows; from Tyrone, 60

loads of iron; from the Clan Rory of Ulster (the present counties of Down and Antrim), 150 cows and 150 hogs; from Oriel (the present counties of Armagh and Monaghan), 160 cows; from the prov. of Leinster, 300 cows, 300 hogs, and 300 loads of iron; from Ossory (the present Queen's County), 60 cows, 60 hogs, and 60 loads of iron; from the Danes of Dublin, 150 hogsheads of wine; from the Danes of Limerick and Waterford, 365 hogsheads of red wine. On these and other revenues king Brian supported a rude but royal magnificence at his chief residence of Kincora, near the present town of Killaloe, in the county of Clare. He had also castles at Tara and Cashel. Brian continued for many years to rule his dominions with vigour and prosperity, reducing the Danes and subduing their native allies, building numerous duns or castles, causing roads and bridges to be constructed, and enforcing the law by taking hostages from all the petty kings of the country. Having however disputed with Maelmora, the king of Leinster, Maelmora revolted, and, inviting a new invasion of Danes to his assistance, brought on the battle of Clontarf, in which king Brian fell, after gaining a glorious victory over the united forces of the invaders and revolted natives, on Good Friday, anno 1014. Brian, and his son Murrough, who fell in the same battle, were buried together in the cathedral of Armagh. The funeral obsequies lasted twelve days and nights, and the possession of the heroic remains was afterwards contested by rival potentates. Brian is said to have defeated the Danes in twenty-five pitched battles: prior to the battle of Clontarf he had confined them to the cities of Dublin, Wexford, Waterford, and Limerick; and the final blow which he gave their power in that engagement they never recovered. He was the founder of the numerous sept of O'Brien, O or *Ua* being a distinctive adnomem not assumed by Irish families till after his time. This national prefix means 'descendant of' or 'of the kindred of,' and was originally supplied by the more ancient Mac, which means 'son.' (O'Connor, *Rev. Hib. Scrip. Vet.*; MSS. *History of Ireland*, lib. R. I. Academy.)

BRIANÇON, a fortified town of France, and capital of an arrond. in the dep. of Hautes Alpes, is situated quite among the Alps, 7 or 8 m. from the pass of Mont Genève, and at the junction of the small stream the Guisane with the Durance. It is on the road from Paris by Lyon and Grenoble to Turin, 422 m. from Paris, 44° 54' N. lat., 6° 47' E. long. It is 4285 ft. above the level of the sea.

This little town, which is mentioned by Strabo, and in the Itineraries, appears in them under the name Brigantium. In the middle ages it was the chief place of a district, Briançonnois, comprehended in Dauphiné. It does not appear to have been of any note till the early part of the last century, when, by the cession of some parts of the Briançonnois to Savoy, it was determined to strengthen it as a frontier town with new fortifications.

It is one of the smallest towns in France, with narrow streets, but neither badly laid out nor badly built. There is a pretty good *place* or square, and a tolerably well built church. The inh. (about 2000 for the town, or 3000 for the whole comm.) are engaged busily in trade in hosiery, cotton goods, and hardware, and especially in the book trade. Its defences, which are very strong, consist mainly of seven forts, which occupy in the most advantageous manner all the surrounding heights. The works are partly formed from the rocks on which they stand. The Durance flows in a very deep channel or ravine between the town and the principal forts: over this ravine a bridge of one arch, of about 128 Eng. ft. span, and nearly 180 ft. high, was thrown in 1734.

The surrounding district sends out every winter into the neighbouring dep. a number of emigrants, who exercise the profession of schoolmasters; they speak and write French tolerably well, understand the four rules of arithmetic, and sometimes Latin. The kitchens of the Catholic priests commonly serve them for school-rooms. Some coal is dug here.—(*Voyage de Villiers*; Malte Brun.)

The arrond. of Briançon had, in 1832, a pop. of 29,636.

BRIANSK, a t. of Great Russia, in the government of Orel, and the chief place of a circle of the same name. It is an ancient and well-built t. situated at the entrance of the Obolova into the Desna, is surrounded by a wall of earth, and contains 16 churches (9 of stone and 7 of wood), a monastery with a seminary attached to it, 2 poor-houses, about 600 houses, and about 5100 inh. On account of the excellent ship-timber which the neighbouring country produces, there is an admiralty-office here. It likewise pos-

sesses a foundry for cannon, several tanneries, and a considerable trade with the Black Sea, Baltic, and other quarters in grain, hemp, rape-oil, honey, wax, linens, timber, cast-iron and iron ware, mats, ropes, bark, tar, lime, alabaster, &c. Some small vessels are built, and there is a manufactory of arms in the neighbourhood. 53° 21' N. lat. 37° 19' E. long.

BRIARE, a small town in France in the dep. of Loiret, on the right bank of the Loire, 92 m. nearly due S. of Paris. The town has little in itself worthy of notice. It consists of one straight and tolerably handsome street. The inh. by the census of 1832 were taken at 2243 for the town, and 2730 for the whole com.; they are mostly engaged as boatmen on the riv. or canal.

The can. of Briare deserves notice from its position and importance in the system of inland navigation in France, and from its having preceded in its formation most other works of a similar nature in that country. It was commenced in the reign of Henry IV., under the enlightened administration of Sully; but upon the retirement of that great minister the work was interrupted. It was resumed in 1639 in the reign of Louis XIII. by two private individuals, MM. Guyon and Bouterous, to whom the king granted the can., with its works, so far as they were executed, and all the materials they might find on the spot. The can. unites the Loire at Briare with the Loing at Martargis; and as the Loing was rendered navigable from that point to its junction with the Seine, the can. opened a communication between the various towns and districts watered by the Loire, and the capital. For a long time the advantages arising from the can. were very considerable, but they were much diminished by the formation of the can. of Orléans, which opened a readier communication between the Loire and the middle and lower part of the Loire.

BRIBERY, in English law, has a threefold significance denoting, first, the offence of a judge, magistrate, or other person concerned judicially in the administration of public justice, receiving a reward or consideration from any person interested, for the purpose of procuring a partial and favourable decision; secondly, the receipt or payment of money by a public ministerial officer as an inducement to him to do contrary to his official duty; and thirdly, the giving or receiving of money to procure votes at parliamentary elections or elections to public offices of trust.

By the Athenian laws the first of these offences rendered the receiver liable to a penalty of ten times the value of the bribe received, and the punishment of infamy; and the person offering the bribe was also subject to prosecution and punishment. By the Roman law there were various provisions against bribery, and mainly with reference to election to the higher offices in the state, as consul, prætor, &c. This offence was expressed by the term *ambitus*, against which there were very numerous enactments. By the Lex Acilia Calpurnia (s. c. 68) a man convicted of bribery (*ambitus*) was disabled from filling a public office, and from entering the senate, besides being fined. These penalties were extended by the Lex Tullia (s. c. 64), passed in the consulship of Cicero. (See the *Oration pro Murena*, which is a defence of Murena against the charge of *ambitus*.) By the Lex Aufidia (s. c. 62) it was enacted that if a man promised money to any tribe for its votes, he should escape all legal penalties, in case he did not receive the money; but if he paid it, he was bound to pay to the tribe as long as he lived a fixed sum of money. On this occasion Cicero made a remark, which he no doubt thought had some point in it: 'Clodius,' he said (with whom that great orator was then at open war), 'had observed this before it was made: he was in the habit of promising and not paying.' (*Cic. ad Attic. l. 16.*) The offence of bribery in a judge was included in the comprehensive term *Repetundæ*, upon which there were several enactments. The chief were the Lex Cornelia and the Lex Julia: the latter passed (s. c. 60) in the first consulship of Julius Cæsar.

I. In England judicial bribery has from early times been considered as a very heinous offence. By an ancient statute 2 Hen. IV. 'All judges, officers, and ministers of the law, convicted of bribery shall forfeit treble the bribe, be punished at the king's will, and be discharged from the king's service for ever.' The person offering the bribe too is guilty of a misdemeanour. Sir Edward Coke says that 'if the person offereth a bribe to the judge, meaning to corrupt him in the cause depending before him, and the judge taketh it, yet this is an offence punishable by law in the party'

doth offer it.' (3d *Inst.* 147.) In the 24 Edw. III. (1351) Sir William Thorpe, then chief justice of England, was found guilty, upon his own confession, of having received bribes from several great men to stay a writ which ought in due course of law to have issued against them. For this offence he was condemned to be hanged, and all his lands and goods forfeited to the crown. Blackstone says (*Comment.* vol. iv. p. 140) that he was actually executed; but this is a mistake, as the record of the proceeding shows that he was almost immediately pardoned and restored to all his lands (3 *Inst.* 146). It appears also from the Year Book (28 *Ass.* pl. 2) that he was a few years afterwards reinstated in his office of chief justice. The case, therefore, does not speak so strongly in favour of the purity of the administration of justice in early times as many writers, following Blackstone, have supposed. In truth, the corruption of the judges for centuries after Sir Wm. Thorpe's case occurred was notorious and unquestionable. It is noticed by Edward VI. in a discourse of his published by Burnet, as a complaint then commonly made against the lawyers of his time. (Burnet's *Hist. of the Reformation*, vol. ii. App. p. 72.) Its prevalence at a still later period, in the reign of James I., may be inferred from the caution contained in Lord Chancellor Bacon's address to Serjeant Hutton upon his becoming a judge, 'that his hands and the hands of those about him should be clean and uncorrupt from gifts and from serving of turns, be they great or small ones.' (Bacon's *Works*, vol. ii. p. 632, edit. 1765.) In Lord Bacon's own confession of the charges of bribery made against him in the House of Lords, he alludes, by way of palliation, to the offence of judicial corruption as being *vitium temporis*. (Howell's *State Trials*, vol. ii. p. 1104.) Since the Revolution, in 1688, judicial bribery has been altogether unknown in England, and no case is reported in any law book since that date in which this offence has been imputed to a judge in courts of superior or inferior jurisdiction.

II. Bribery in a public ministerial officer is a misdemeanour at common law in the person who takes and also in him who offers the bribe. Thus a clerk to the agent for French prisoners of war at Porchester Castle, who had taken money for procuring the exchange of certain prisoners out of their turn, was indicted for bribery and severely punished by the Court of King's Bench. (1 *East's Reports*, 183.) So where a person offered the first lord of the treasury a sum of money for a public appointment in the colonies, the Court of King's Bench, in Lord Mansfield's time, granted a criminal information against him. (4 *Burrows's Rep.* 2500.)

Bribery with reference to particular classes of public officers has become punishable by several acts of parliament. Thus by the stat. 6 Geo. IV. c. 106, sect. 29, if any person shall give, or offer, or promise any bribe to any officer or other person employed in the customs, to induce him in any way to neglect his duty (whether the offer be accepted or not), he incurs a penalty of 500*l.* So also by 6 Geo. IV. c. 108, sect. 35, if any officer of the customs, or any officer of the army, navy, marines, or other person employed by or under the direction of the commissioners of the customs, shall make any collusive seizure, or deliver up, or agree to deliver up, or not to seize any vessel, or goods liable to forfeiture, or shall take any bribe for the neglect or nonperformance of his duty, every such offender incurs a penalty of 500*l.*, and is rendered incapable of serving his Majesty in any office whatever, either civil or military; and the person also giving or offering the bribe, or making such collusive agreement with the officer, incurs the like penalty. By the 8 Geo. IV. c. 80, sect. 145, similar penalties are inflicted upon officers of the *excise* who take bribes, as well as upon those who give or offer the bribe.

III. As to bribery for votes at elections to public offices.

1. Bribery at parliamentary elections is said to have been always an offence at common law. There are however no traces of any prosecutions for bribery of this kind until particular penalties were imposed upon the offence by acts of parliament. The operative statute upon this subject at the present time is the 49 Geo. III. c. 118, which provides that if any person shall give or cause to be given, directly or indirectly, or shall promise or agree to give any sum of money, gift, or reward, to any person upon any engagement that such person to whom such gift or promise shall be made, shall by himself or by any other person at his solicitation pro-

cure, or endeavour to procure, the return of any person to serve in parliament for any place, every such person so giving or promising (if not returned) shall for every such gift or promise forfeit the sum of 1000*l.*; and every such person returned and so having given or promised to give, or knowing of and consenting to such gifts or promises upon any such engagement, shall be disabled and incapacitated to serve in that parliament for such place; and any person or persons who shall receive or accept of any such sum of money, gift, or reward, or any such promise upon any such engagement, shall forfeit the amount of such sum of money, gift, or reward, over and above the sum of 500*l.* [ELECTIONS.]

2. Bribery at municipal elections was also an offence at common law, and a criminal information was granted by the Court of King's Bench against a man for promising money to a member of the corporation of Tiverton to induce him to vote for a particular person at the election of a mayor. (*Phympton's case*, 2 Lord Raymond's *Reports*, 1367.)

The 54th clause of the recent act for the regulation of Municipal Corporations in England and Wales (5 and 6 Will. IV. c. 76) provides 'that if any person who shall have, or claim to have, any right to vote in any election of mayor, or of a councillor, auditor, or assessor of any borough, shall ask or take any money or other reward, or agree or contract for any money or other reward whatsoever, to give or forbear to give his vote in any such election, or if any person shall by any gift or reward, or by any promise, agreement, or security for any gift or reward, corrupt or procure, or offer to corrupt or procure any person to give or forbear to give his vote in any such election, such person so offending in any of the cases aforesaid shall for every such offence forfeit the sum of 50*l.*, and for ever be disabled to vote in any municipal or parliamentary election whatever in any part of the United Kingdom, and also shall for ever be disabled to hold any office or franchise to which he then shall or at any time afterwards may be entitled as a burgess of such borough, as if such person was naturally dead.'

BRICK, clay mixed with sand or fine coal ashes, and particles of small coal sifted, and afterwards burnt in a clamp: or clay mixed with sand, or clay alone, baked in a kiln. The antients both baked their bricks and dried them in the sun. Among the oldest specimens of bricks are those in the ruins of Babylon, which were of three sorts [BABYLONIAN]. The Egyptians used sun-dried bricks in the large walls which inclosed their temples, and in the constructions about their tombs. At Thebes there are true arches made of sun-dried bricks: pyramids also were sometimes built of these bricks, which, as well as those made by the people who settled in the plain of Shinar, consisted of clay and chopped straw. The Egyptian manner of making bricks is delineated in Rosellini's work on the paintings of Egypt. The Romans, according to Pliny, began to use bricks about the decline of the republic; but a brick building, called the temple of the god Redicolus, still remains, which is said to have been built on the occasion of the retreat of Hannibal. (Rosini's *Views in Rome*.) It has been supposed that the Greeks did not employ bricks until after their subjugation by the Romans, as none of the works erected prior to that period, the ruins of which still exist, show any signs of brickwork; yet there are Greek buildings mentioned by Vitruvius as built of brick, which may have been prior to that date. Vitruvius (lib. ii. cap. 7) mentions the wall of Athens towards Mount Hymettus and Pentelicus, and the cells of the temples of Jupiter and Hercules; and indeed it would be easy to show from various passages that bricks were in use among the Greeks before the Roman conquest. (Demosthenes, *περί ορισμάτων*, c. 103.) The Greek names for bricks were didoron, pentadoron, tetradoron, from the Greek doron, 'a hand-breadth.' Pentadora are bricks five dora, and tetradora bricks four dora on each side. All these bricks were also made half the size, to break the joint of the work; and the long bricks were laid in one course, and the short in the course above them.

Vitruvius says the pentadora were used in public works, and the tetradora in private. It is most probable that they were dried bricks, as Vitruvius speaks of bricks requiring two years to dry. We learn also from him, that the laws of Attica required that five years should be allowed for the drying of bricks. It is true they might when well dried be burnt; but when he says (vol. i. cap. 8) that 'if they are used when newly made, and moist, the plaster work which is laid on them remaining firm and stiff, and they

breeze; the fue is then overspanned. The clamp when full is surrounded with old bricks, or the driest of those newly made, and on the top of all a thick layer of breeze is laid. The external bricks are coated with a thin plastering of clay to exclude the air, and if the weather prove wet, the kiln is protected by 'loos' or hurdles, with rushes woven into them. The fire is lighted at the mouths of the flues, which are called the live-holes. If the fire burns well, the mouths of the flues are stopped. In favourable weather the bricks will be burnt in about twenty-five or thirty days, but it is not advisable to open the clamp too soon, as the bricks become speckled when the ash on the surface is not quite consumed. Bricks only partially burnt are called burnovers, and are put into the next clamp. The bricks are now separated for sale; the hard sound stocks are the best, and are worth from 1*l.* 10*s.* to 2*l.* a thousand: the place or inferior soft red brick from 1*l.* to 1*l.* 10*s.*; and the clinkers or burrs, black-looking masses of vitrified brick, are worth about 10*s.* a load. When burnt they are on an average 9 inches long, 4½ wide, and 2½ thick. Kiln-burnt bricks and marl stocks, as well as Dutch clinkers, differ from the bricks just described. The kiln-burnt are baked. The marl stocks may be either baked or burnt: they take their name from the marl originally used in them, which has now given place to chalk. The Dutch clinkers are small hard yellow bricks, not much used at present in this country; except occasionally for soap-boilers, cisterns, vaults, stables, and yards. Besides these kinds there is capping or coping brick, for surmounting fence walls, which is made both angular and semicircular to throw off the wet. A larger sort of brick, 12 inches long, 6 broad, and 3 thick, is used in fences; cogging bricks form the indented works under the coping of walls built with large bricks; a circular brick, called compass-bricks, is used for wells; hollow or draining bricks are flat on one side and hollow on the other; fire bricks, called also Windsor bricks, are 1½ inches thick, of a very firm texture, and resist for a long time a fierce fire; common paving bricks are of the same size as Windsor bricks; feather-edged bricks are the same size as the common brick, except that they are thinner; they are used on edge in the external part of wooden buildings. The French brick is 8 French inches long, 4 broad, and 2 thick. Stock-bricks are known by the names of picked stocks, red, and grey stocks. Burrs or clinker-bricks are those which are much vitrified in the fire: sometimes 100,000 of them have run together in one mass. Bricks having a smoothed or glazed surface are sometimes made: this is done in the burning.

Mr. Lees discovered that certain proportions of chalk and loam, treated in the usual manner, made a good substitute for the marl or malm stocks. He took out a patent some time since, which, having expired, his practice is now very generally adopted round London. These bricks, however, are not considered to have either the fine colour of the London malm stock, or the beautiful stone-coloured hue of the Ipswich brick. The following is the method of making them, as described by Mr. Nicholson:—

A circular recess is built, about four feet high, and from ten to twelve feet in diameter, paved at the bottom, with a horse wheel placed in its centre, from which a beam extends to the outside for the horse to turn it by. The earth is then raised to a level with the top of the recess, on which a platform is laid for the horse to walk upon. This mill is always placed as near a well or spring as possible, and a pump is set up to supply it with water. A harrow made to fit the interior of the recess, thick set with long iron teeth, and well loaded, is chained to the beam of the wheel to which the horse is harnessed. Previously to putting the machine in motion, the soil, as prepared in the heap in the ordinary manner, is brought in barrows, and distributed regularly round the recess, with the addition of a sufficient quantity of water; the horse then moves on, and drags the harrow, which forces its way into the soil, admits the water into it, and by tearing and separating its particles, not only mixes the ingredients, but also affords an opportunity for stones and other heavy substances to fall to the bottom. Fresh soil and water continue to be added till the recess is full. On one side of the recess, and as near to it as possible, a hollow square is prepared, about eighteen inches or two feet deep. The soil being sufficiently harrowed and purified, and reduced to a kind of liquid paste, is ladled out of the recess, and, by means of wooden troughs, conveyed into this square pit; care being taken to leave the sediment behind, which is afterwards to be cleared out and thrown on

the sides of the recess. The fluid soil diffuses itself over the hollow square or pit, where it settles of an equal thickness, and remains till wanted for use, the superfluous water being either evaporated or drained away by exposure to the atmosphere. When one of these square pits is full, another is made by its side, and so on progressively, till as much soil is prepared as is likely to be wanted for the season.

It should be observed, that bricks burnt in the clamp have the ashes mixed with them, and the firing is actually in the brick; but those burnt in a kiln have no ashes mixed with them, and the fire is applied externally only. Kilns for burning bricks are constructed of various sizes. They are sometimes conical or domed; some are square-built with brick piers, and covered with tiles. A kiln thirteen feet long, ten feet six inches wide, and twelve feet high, will burn 18,000 bricks at a time. The walls of a kiln are about fourteen inches thick, and incline inwards towards the top.

About the year 1795 a patent was obtained for making bricks on a new plan. This brick was like the common brick, except that it had a groove or rebate on each side down the middle, rather more than half the width of the side of the brick: a shoulder would thus be left on each side of the groove, each of which would be nearly equal to one-quarter of the width of the side of the brick, or to one-half of the groove or rebate.

A course of these bricks laid shoulder to shoulder, will form an indented line of nearly equal divisions, the grooves or rebates being somewhat wider than the adjoining shoulders, to allow for the mortar or cement. When the course is laid on, the shoulders of the bricks, which compose it, will fall into grooves of the first course, and the shoulders of the first course will fit into the grooves of the second; and so on with every succeeding course. Buildings constructed with this kind of brick will require no bond timbers, as a universal bond runs through the whole building, and holds all the parts together.

A patent clay-tempering and brick-making machine has lately been invented by Mr. Bakewell of Manchester. By the clay-tempering machine the clay is better mixed than by any method hitherto employed; and by the use of the moulding machine the porosity of the bricks is in a great measure destroyed, the pressure employed in the moulding being equal to three tons weight. The machine for consolidating the bricks consists of a skilful combination of levers producing a great pressure, the result of which is the compression of the clay into the greatest compactness and utmost accuracy of form. The mould employed opens on a hinge at one of its angles, and closes by a spring latch. (For further particulars, see *The Mechanics' Magazine*, May 14, 1831.)

A patent has been taken out by Messrs. Rhodes for a brick in which coke ashes are introduced, finely pulverized by means of a mill with French stones (similar to those used in a flour-mill), and worked by a steam-engine. Peculiar pains are also taken with the manufacture of the bricks, and an unusually fine surface and arris are produced. But the bricks are liable to the same casualties as other clamp-burnt bricks; although if they get just fire enough, they are certainly of superior quality.

The duty on bricks was first laid in 1784, at 2*s.* 6*d.* a thousand. In March, 1794, an additional 1*s.* 6*d.* per thousand was laid on bricks. On the 4th July, 1803, the duty was increased to 5*s.*, and in March, 1835, a further duty of 10*d.* a thousand was added. On the 4th of July, 1803, a duty of 10*s.* per thousand was laid on all bricks of larger dimensions than the common bricks. Polished bricks are charged a duty of 12*s.* 10*d.* a thousand: large polished, 24*s.* 2*d.* do. The words of the Act referring to glazed bricks are 'smoothed and polished;' and so strict are the revenue officers, that bricks struck with a bat or on a table to straighten them, if warped, have been called smoothed and polished, and charged the extra duty. The following is the account of the quantities of bricks (not including tiles) charged with excise duties in Great Britain for the three years ending 1834. (*Government Statistical Tables*, 1834.)

	Quantities charged.	Amount of Duty.
1832 .	998,346,362 . . .	£294,332 18 10
1833 .	1,035,915,662 . . .	304,942 1 11
1834 .	1,180,161,228 . . .	347,303 5 2½

From the year 1820 to 1831 inclusive, the smallest number of bricks charged with duty in Great Britain, in any one year (1821), was 978,655,642; and the greatest

number (1855) was 1,991,465,378. Ireland being exempt from the duty on bricks, is not included in these returns. The whole duty is drawn back on exportation.

BRICKLAYER. A charter was granted in 1568 to the tilers and bricklayers in London, by which they were formed into a corporate body, consisting of a master, two wardens, twenty assistants, and seventy-eight livery.

Bricklayers form a very numerous body of artisans in this country. A good workman can lay 1500 bricks daily in walls. His wages in London are 5s., 5s. 6d., and even 6s. a day. Country workmen have generally 4s. a day. Wages however vary according to the locality.

BRICKWORK. Brick walls are of various thicknesses. Four and a half inches or half brick; nine inches or one brick; fourteen inches or one and half brick; and eighteen inches or two bricks; and two bricks and a half and so on, to about three feet two inches. Except in large public works, walls are seldom built more than four bricks thick. In good work three bricks are well bonded together.

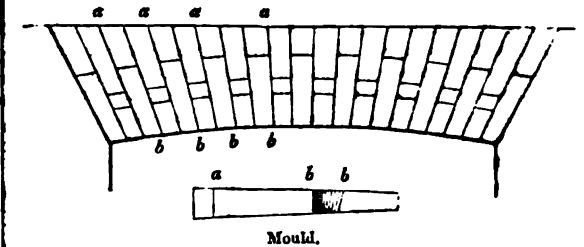
There are four kinds of bond in use in laying bricks, called English bond, Flemish bond, herring bond, and garden-wall bond. English bond consists of bricks laid lengthwise on the length of the wall, and crossed by bricks laid with their breadth on the wall. The former are called stretching courses, and the bricks stretchers; the latter heading courses, and the bricks are called headers. This bond is much used in water-works.

Flemish bond consists in laying a header and stretcher alternately in the same course. This bond, which is considered by bricklayers the most beautiful, is not so effectual as the English bond. To unite more firmly the Flemish bond brickwork, especially in thick walls, and to remedy the weakness of the stretching courses, the bricks are often placed at an angle of forty-five degrees parallel to each other, and reversed in the alternate courses; this is done in the centre or core of thick walls, and is called herring-bone. It is advisable only to use this diagonal brickwork occasionally, because, though the bricks in the core have sufficient bond, the sides, on account of the triangular interstices, are very improperly tied to the core. Flemish bond is however varied according to the width of the openings in the wall or front of a house. The reveals of windows are bonded every alternate course, with a closure or quarter brick and a half brick. The reveals of doors are terminated with a half brick and closure. Garden-wall bond consists of three stretchers and one header in nine inch walls, but when fourteen inches thick, the Flemish bond is used. In English bond, it is to be observed, that as the length of a brick is nine inches, and its breadth four and a half, it is the practice to prevent two perpendicular joints from falling over each other, at the end of the first stretcher from the corner header, by the introduction of a closure, or by a three-quarter brick or *bat* as it is technically called, instead of a stretcher at the corner.

The most difficult work for the bricklayer to execute is the groining or intersection of arches in vaults, where every brick has to be cut to a different bed. This and the arches called gauged arches, either circular or straight, cut with the axe and rubbed on the banker or table, and afterwards set in lime only, called putty, require the neatest workmanship. Some straight arches are made roughly; that is, the bricks are inclined each way, parallel to each other on the respective skewbacks or shoulders of the arch, until the soff-ends of the bricks touch, when the vacant space at top is filled with two bricks forming a wedge: this arch, like other straight arches, is constructed on a camber slip, or piece of wood slightly curved on the upper side, and serving as a centering.

The bricks for rubbed or gauged arches are cut with radiating lines. Those for cambered or straight arches are cut by the manual skill of the workman, and the lines do not radiate exactly to one centre, like the bricks in semicircular gauged arches. The following is the method adopted by bricklayers in cutting the straight arch. The straight arch, so common in houses in London, is first drawn out the full size on a board; the top part is a straight line; the lower, the curved line of the camber-slip, a segment of a circle, and the sides, the inclination of the skewback of the arch, which is usually inclined about seven inches and a half from the upright of the reveal. The top and the bottom lines are then divided into an equal number of equal parts, and lines radiating are drawn as shown in the cut. The joints follow the curve of the camber-slip.

The curved line at the bottom given by the camber-slip is cut by means of the bevel; every angle of each brick being different, they are copied by the bevel, and set off in succession on the mould and numbered, so that for the rest of the operation, the workman has only recourse to the mould.



[Cut of the mould with the bevels set off upon it.]

a represents the point at the top line of the mould, being a guide for the length of the brick; *b b*, the angles set off by the bevel.

A larger, or what is called an irregular segment is cut in the same manner. A semicircular arch being struck from one centre requires but one mould, without the aid of the bevel, as all the bricks are alike and have their ends at the same angle. All arches, it should be observed, are constructed on centerings of wood. In straight arches the camber-slip answers the purpose of a centre.

Elliptical arches are cut like straight and semicircular arches, the ends like semicircular arches, and the centre like camber arches.

Corbelling, or a projecting of brickwork, is often practised to gain space for flues and over corners of narrow streets.

In steyning wells it is usual to employ brickwork where the soil is loose. For this purpose a centre is required, made with circular rings of wood boarded round the outside; upon these rings the bricks are laid. As the digger excavates the ground, the centre with the brickwork sinks, and another is laid upon it till the whole work is completed.

Mortar is the common medium employed to cement brickwork. This cement is composed of lime, grey or white, but grey or stone lime is the better; it is mixed with river sand, sea sand, or road sand, in the proportion of one of grey lime to two and a half of sand, and one of white or chalk lime to two of sand.

In dry weather and for firm work the best mortar should be used, and the bricks should be wetted or dipped in water as they are laid, which makes them adhere firmly to the mortar. Brick-work in drains and foundations, where it is liable to be constantly wetted, becomes so firmly united with the mortar as not to be separated without the greatest difficulty. The work in this state is said to be water-bonded.

In building walls, they should be carried up level and round simultaneously, and not one part higher than another, lest in the shrinking there should be a settlement, which would cause the parts to separate.

In laying the foundation of walls the first courses are always laid broader than the wall intended to be carried up; these courses are called the footings, and the projections are called set-offs: there are generally two inches in projection. Garden-walls are usually built with piers, projecting four and a half inches from the face of the work at every ten or twelve feet. These piers are turned in at the top like buttress-heads, and the top of the wall is finished with a course of brickwork on edge.

When new walls are to be built to old it is usual to cut a chase or draw a brick at every other course in the old wall, and *tooth* in the new work. When it is intended to join walls to other buildings these toothings are left. The flues for chimneys are twisted to prevent their smoking [see House, in which a drawing represents a stack of chimneys and flues as built in London]: they are always chalked on the wall of a house to which another is intended to be added. The following are the substances of brick walls, as required to be built in London according to the Building Act of the Geo. III. c. 78.

In first-rate buildings the external walls are directed to be built of two bricks' length in thickness to the ceiling line of first floor, and the party walls in the basement story two and a half bricks, and from thence to the gutter two bricks. In second rate buildings the party walls are two bricks and a half thick in the basement, and two

to the first and second floors. The external wall has one brick and a half, and one brick in the two upper stories. The thick-walls have the external wall one and a half bricks thick in the basement and one brick above, and the party wall two bricks in the basement and one and a half brick above. The partition-wall has one and a half bricks in basement of both party wall and external wall and one brick above in each wall.

And if brickwork was taken from the original standard of 12½ feet square, and consequently the superficial and of brickwork consists of 272½ square feet; but as the ½ was found unnecessary in calculation, 272 superficial feet has been adopted as the standard for a rod of brickwork.

The following is the method in practice for estimating the number of rods and feet in a brick wall, if of the standard thickness, which is 12½ inches, or a brick and a half. Multiply the length by the height, and divide by 272, which will give the rods. If it is more or less than the standard thickness, multiply the surface by the half length of brick to the thickness of the wall, divide the product by 4, and the wall will be reduced to the standard, which, if divided by 272, will give the work in rods; or if the work is valued, it may be divided by 200 to reduce it to rods 20. For details of the value and measurement of brickwork, see *Bliss's Perpetual Price Book* and *Nicholson's Dictionary*. A rod of standard brickwork set with mortar will require 2200 bricks upon an average. The mortar required for the same is 1½ cwt. of whiting or white lime with two loads of sand, or 1 cwt. of stone lime with 2½ loads of sand. In walls a foot of redwood brickwork requires 17 bricks. A foot superficial of goughed bricks requires 10 bricks. A yard of paving requires 67 paving bricks, or 48 street-bricks, or 144 Dutch clinkers laid on edge, or 36 bricks laid flat. The value of a rod of stock brickwork is from 11s 3d to 14s, according to the locality. If set in cement it is about the price. The weight of a rod of brickwork is calculated to be 16 tons, 7 cwt., 2 qrs., 1 lb., in the following quantities:—

	tons.	cwt.	qrs.	lbs.
2200 bricks	9	12	0	0
61 cubic feet of sand	4	4	2	30
40 ft. 0 in. of cloak lime	2	0	2	0
	15	7	2	1

Among the most remarkable specimens of ancient brickwork are the masses on the Palatine hill and the baths of Caracalla. The Roman brickwork in large works is excellent; the bricks are very hard, and so firmly cemented, that they cannot be separated without the greatest difficulty. Most early work has been shown in the excavation of the wall, and one building, still existing near the ruins of Eggeria, has columns, capitals, metellones, dentils, and other ornaments finely cut in a yellowish brick closely cemented together and set in high preservation. The most recent specimens of ancient Roman brickwork are the walls which surround Rome; there are also many specimens scattered throughout Italy. The bricks being generally thin and of the nature of tiles, the circumstance diminished the difficulty of constructing arches, of which the great ruins of the Temple of Peace in the Forum Romanum are remarkable examples. The Turk Kiosk at Constantinople about 18 or 20 miles from Hagia Sophia is perhaps the largest ancient brick arch existing, being a semicircle 20 ft. wide, 160 ft. high, and 150 ft. long. (*Ann. Mag. Nat. Hist. Lond.*, p. 369.)

The most beautiful specimens of brickwork executed by the Romans are those formed of triangular bricks filled with vitrified matter. The reticulated work, which is constructed with stones, is often bonded with courses of brickwork. In Champagne columns constructed with bricks have been discovered; in this city the brickwork of the public buildings has been very accurately preserved.

The brick dome of Santa Sophia at Constantinople is made of porous bricks light enough to float on water. The brick towers of Bologna are stupendous piles of brickwork. London contains more brick buildings than any other city in the world, some of which are built of the best materials and by the best workmen. St. James's Square in London, is now of the best specimens of brickwork in Great Britain. The most extensive covered brickwork in London is in the sewers. The Thames Tunnel is also a remarkable piece of brickwork, but the largest work of wall construction yet seen in England is the new railway from London to Greenwich, which is not yet finished. The brickwork is

Holland is very accurate. There are many curious brick towers in Germany, especially in Hanover; and some architectural display in brickwork appears in several of the smaller Italian towns. But the most singular and beautiful brickwork is found in North Prussia, in the Marien Kirche at Brandenburg, the castle of the Teutonic knights, and a variety of other buildings.

Brickwork was not common in London until after the great fire of 1666. There are early specimens of brickwork in some of the old historical mansions, in which the chimneys are the most conspicuous features. But few of these houses are of greater antiquity than the time of Henry VII. and VIII.; and most of them date about the reign of Elizabeth. Hampton Court, built by Cardinal Wolsey, is a specimen of good ancient English brickwork. One of the most elaborately carved specimens of English brickwork with which we are acquainted is a tank in the church of Wycombe, North Bucks, which is in the early Italian style covered with grotesque ornaments. The practice of covering surfaces, &c. in brick continued till about a century ago, when it ceased, owing to the more frequent use of stone. Inigo Jones used brick moulded surfaces in some of his structures.

REDWELL, a name frequently given to houses of correction. The name of its being so applied may be traced to the following circumstances. Before the Reformation, there were in London and various parts of the country wells termed 'holy wells,' whose waters were supposed to be endowed with peculiar virtues if taken at particular festivals or other times. Some of them in reality were medicinal springs. St. Rad's well, near the church of St. Rad, in Fleet Street, was one of the holy wells of London. In the vicinity of this well Edward VI. founded an hospital, which was afterwards converted into a receptacle for disorderly apprentices, in fact, into a House of Correction. The boys were distinguished by a particular dress, and were in the habit of attending fires with an engine belonging to the hospital. In 1736 a report was made to the governors respecting the unruly conduct of the 'Redwell boys.' Their turbulence in the streets had become a great nuisance to passable citizens. From that time their peculiar customs was laid aside, their general conduct underwent an improvement. Redwell Hospital is at present used as a receptacle for rogues committed by the Lord Mayor and sitting aldermen; for apprentices sentenced to solitary confinement; as a temporary lodging for persons previous to being sent home to their respective parishes; and a certain number of boys are brought up to different trades. Houses of correction in different parts of the country which are called *hulwells* are so called in consequence of the hospital in Blackfriars having been the first place of confinement in which penitentiary amendment was a leading object.

BRIDGE, a construction of stone, wood, brick, or iron, consisting of piers, with either horizontal beams laid from one to the other, or with arches between the piers, on which a road way is formed for passengers and vehicles. Parapets are elevated on each side of the road, and flat pavements, called *lanquettes*, are raised for people on foot.

There are still remaining bridges of great antiquity built by the Romans, but we are unacquainted with the earliest history of so useful a contrivance. The first makers of bridges may have taken their ideas from natural works similar to the bridge of Isuman, in South America, or the Rock Bridge in Virginia, or from bridges formed by the fall of trees across small brooks and rivulets.

There is no mention of a bridge in the Old Testament. Perhaps the oldest historical record of a bridge is that of the bridge of Semiramis, at Babylon (*BABYLON*), which consisted of piers with beams laid horizontally from pier to pier. Some Chinese, and some South American bridges built by the Inca (the bridge of Capas Yapanqui, the Inca, over the Desaguadero, for example, are besides in this kind of construction; the arch of the former being constructed of two pieces of stone cut to a quarter of a circle; and the latter being large suspension bridges made of rushes.

The Chinese lay claim to a high antiquity for their skill in bridge building by means of arches. The bridge of Fou-tchou-fo, the capital of Fokien, has more than 160 arches. At Tsou-tchou has there is a bridge with 300 stone piers built with angles to the river. The bridge of Sou-tchou-fo, a shallow estuary, is 2500 Chinese feet in length and 26 in breadth. The road-way of this bridge is laid

horizontally with huge blocks of stone on 252 stone piers, and on these other stones are laid across. The city of Chao-king, like some of the Dutch towns, has numerous canals, and in consequence numerous bridges, for the most part of one arch, and rising very high. At Tansi there is a freestone bridge of seven arches, the centre arch of which is about 46 feet wide. Chinese bridges have pointed, semicircular, polygonal and semi-elliptical arches. Their construction, which is curious, is described by Mr. Barrow. (See also DUHALDE, vols. ii. and iv. pp. 91, 357; and the Index.)

The bridges in South America called bujaco are very narrow, and from the lightness of their materials, and being suspended, they oscillate in a terrific manner. The width of these bridges often does not exceed 4 ft. 6 in. The Taribita bridge consists of a single rush rope, on which a kind of carriage is swung, and drawn from one side to the other by another rope attached to it and held by a person on the bank. (See also BOOTAN, p. 169.)

The oldest stone bridges with which we are acquainted, several of which are still perfect and in use, are those built by the Romans. Their solidity and proportions prove that they must have been constructed on sound principles. The chief of these structures which still remain at Rome, are the bridges of Fabricius and Cestius, connecting the island of the Tiber with the city of Rome and the opposite bank; the Milvius, over which passed the Flaminian way; and the bridge of Hadrian. The Sublicius, an ancient bridge at Rome, was built of wood; but the most remarkable wooden bridge constructed by the Romans was that thrown by Cæsar over the Rhine. It was built with a double row of piles, inclining to the course of the stream, and joined together at two ft. from each other: forty ft. apart from these was another similar row inclined against the stream. Long beams, two ft. thick, were fixed between the piles, and held fast at each end by two braces. The beams were joined by transverse pieces. The first double row of piles was protected by other piles beyond them, which served as buttresses, and were designed to protect the piles from timber floating down the stream. (See Cæsar's *Commentaries*, translated into Italian by Baldelli, with designs by Palladio, Venice, 1575; and also *Commentarii*, &c., Venetiis, 8vo. 1513, 1519, with a picture of the bridge over the Rhine.)

The bridge built by Trajan over the Danube by the most stupendous work of the kind ever constructed by the Romans. (Dion. Cass., lib. lxxviii. c. 13.) It consisted of 20

piers of stone, 60 Roman ft. broad and 150 ft., without the foundations, above the bed of the river; the width between each pier was 170 ft., and the piers were united by arches.

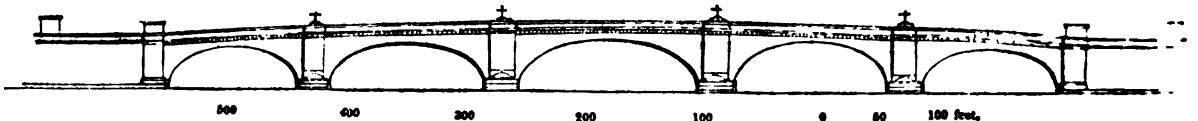
The bridge of Narni, which is a fine specimen of Roman work, is constructed over the Nera, where it flows between two precipitous hills. This bridge originally consisted of four arches, three of which are broken. The height of the arches was about 112 ft., and the width respectively 75, 135, 114, and 142 ft. 6 in.

The Roman bridge and aqueduct, now called the Pont du Gard, over the Gard or Gardon near Nismes, consists of six arches at its base, the whole length being 465 ft.; a second series of arches, above these, extends 780 ft. to the slope of the mountains on each side; above this is a third series of 35 arches, smaller in size, extending 850 ft., which carries the water from the mountains. The entire height of the structure is 190 ft. Another ancient Roman bridge, that of the Tagus at Alcantara, in Spain, consisted of six arches raised 200 ft. above the river: the whole length was 670 ft., and the breadth 28 ft. [ALCANTARA.]

An old bridge, near Brioude, over the Allier, in the dept. of Haute Loire, consists of one arch, 181 ft. wide, and 68 ft. 8 in. high from the water to the intrados of the arch: the breadth of the bridge is only 13 ft.

Two remarkable bridge-aqueducts have been erected in modern times: one at Alcantara, near the city of Lisbon, the other, called the Ponte Maddelena, near the royal palace of Caserta, in the kingdom of Naples, to supply the fountains in the gardens of that edifice. The structure at Alcantara consists of 35 arches of unequal dimensions. The principal arch is 108 ft. 5 in. wide, and 227 ft. high; the other arches vary from 21 ft. 10 in. in width to 73 ft. The total length of the whole is 2464 ft. The Ponte Maddelena, like the Pont du Gard, consists of a series of arches, one above another, built between the slope of two mountains.

The bridges erected by the Romans in the provinces served as models for the stone bridges which were erected after the dissolution of the empire, and it is to the conquest of this nation that N. and W. Europe is indebted for the introduction of so convenient a means of internal communication. But the finest examples of bridge architecture, which equal any that the Romans have left, and surpass all others in the world, are the five principal bridges of London—Blackfriars' bridge, London bridge, Southwark iron bridge, and Westminster and Waterloo bridges.



[London Bridge.]



[Southwark Iron Bridge—see dimensions, see end of the article.]

Many of the Russian bridges are constructed of wood; and in St. Petersburg the principal bridge is of boats. (See the Plan of St. Petersburg, published by the U. K. S.) When rivers have a rapid current, bridges of boats are commonly employed, as over the Po, in Italy. These bridges, called by the French, *ponts volants*, are rudely constructed with a few boats attached to a rope, and moored in the centre of the stream: the bridge is moved by a rudder, and, assisted by the stream, is carried over to the other side.

The oldest bridge now existing in England is the Triangular bridge at Croyland, in Lincolnshire, which is said to have been erected about A.D. 860, but with what view it is difficult, if not altogether impossible, to determine. It is obvious that utility was not the motive of the builder, though it may be allowed to claim the qualities of boldness of design and singularity of construction as much as any bridge in Europe. It is formed by three semi-arches, whose bases stand in the circumference of a circle, equidistant from each other, and uniting at the top. 'This curious *triume* formation has led many persons to imagine that the architect intended thereby to suggest an idea of the Holy Trinity.' (Nicholson's *Dict.*) Old London bridge, which has recently been removed, was the oldest structure of this kind in the city of London; and

till about the middle of the last century, was the only means of communication, except by ferries, between Surrey and Middlesex. This bridge was begun in 1176, in the reign of Henry II., and finished in that of John, A.D. 1209. For several centuries it was covered with houses, which were at last removed.

The bridge called Pont y Pridd, over the Taff, near Llantrissant, in Glamorganshire, which was completed in 1755, is a fine work. It consists of a single arch 110 ft. wide, forming the segment of a circle of 175 ft. diameter: the height is 35 ft. A bridge over the Liffey, near Dublin, built in 1792, consists of an elliptical arch 106 ft. wide, which rises only 22 ft.

Venice contains a great number of bridges, but with the exception of the Rialto, they are all insignificant. The Rialto was begun in 1588, and finished in 1591, from the design of M. Angelo; it consists of one arch nearly 100 ft. wide, and 23 ft. from the water line; the width is 40 ft. This bridge is constructed of white marble, and the foundation is on piles.

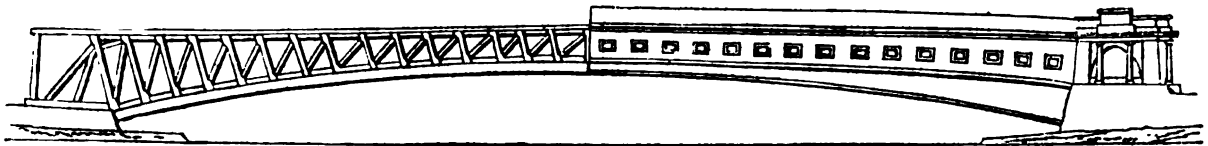
One of the lightest and most elegant bridges of Europe, the Ponte della Trinità at Florence (*Map of Florence*, published by the U. K. S.), consists of three beautiful elliptical

arches. Dresden has a very large bridge of 16 arches over the Elbe. (See the *Plan of Dresden*, published by the U. K. Society.) Paris contains numerous bridges of stone, wood, and iron; of which the oldest is the Pont Neuf, and the most modern a chain or suspension bridge. The bridges of Paris are not remarkable for their length, nor generally for architectural beauty: most of them are inferior to many of the provincial bridges in England. The longest bridge in England, that of Burton-upon-Trent, is 1545 ft. in length, and has 34 arches.

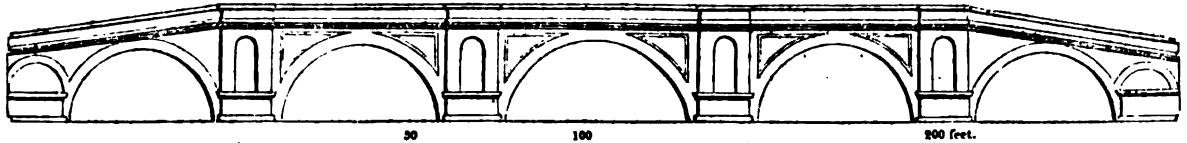
One great improvement in the practice of bridge-building, in modern times, is the construction of equal arches, by which a horizontal line of road is formed, and the inconvenient rise and fall in the carriage-way of the older bridges is avoided. The Pont de Neuilly, built between 1768 and 1780, by M. Perronet, over the Seine, is, we believe, the earliest modern example of this kind of bridge. It has five equal arches, 128 ft. wide, and 32 ft. in height; the piers are 14 ft. thick, and the width of the bridge is 48 ft.: the rise in 33 ft. is not more than $6\frac{1}{2}$ in. In 1771 another flat bridge of 13 semi-elliptical arches was built over the

Allier, at Moulins; these arches are 64 ft. span and 24 high. The bridge of St. Maixence over the Oise, and the bridge of Orléans over the Loire, also approximate to a horizontal line in their road-way. The bridge of Orléans is 1100 ft. long. One of the finest flat or equal-arched bridges ever constructed is Waterloo bridge over the Thames, which was built by Mr. Rennie.

Wooden bridges are much more common than bridges of stone, from the greater facility of constructing them of this material, as well as on account of their cheapness. Bridges built of wood, unsupported by upright posts, and sustained only by abutments at the ends, have been termed pendent bridges and philosophical bridges: such was the bridge of three arches formerly in existence at Walton-on-Thames. Palladio has described three methods of constructing these bridges. The small bridge of one arch over the Cam, at the back of Queen's-College, Cambridge, is of this kind. Among the wooden bridges of America, the Upper and Lower Schuylkill bridges near Philadelphia, and the bridge across the Delaware at Trenton, are perhaps the most remarkable. The chord line of the Upper Schuylkill bridge,



[One-half of the Schuylkill Bridge showing the construction: The other half, the external elevation.]

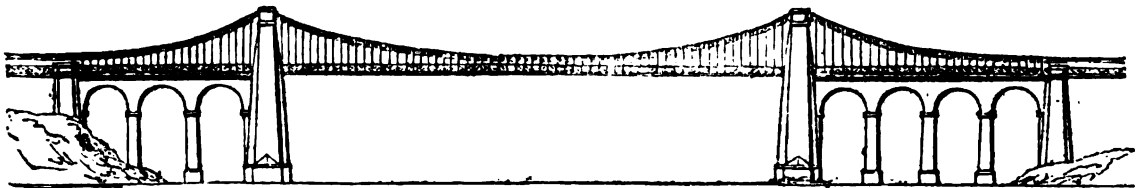


[Pons Senatorius, now Ponte Rotto, restored.]

called the Colossus, is 340 feet. The Lower Schuylkill bridge consists of three arches on stone piers; the centre arch has a chord of 195 feet, and the two side arches 150 feet each. The bridge over the Delaware at Trenton is a very singular construction of five arches, supported on light stone piers. The chord of the centre arch is 200 feet; the two arches on each side the centre, 180 feet; and the two abutment arches, 160 feet each. This bridge was erected by C. A. Busby, in 1819. A very accurately-engraved drawing of it has been published by Messrs. Taylor, of Holborn,

to which the working drawings are attached. Wiebeking, a German engineer, has constructed some fine bridges of wood. One at Bamberg is 208 feet span.

A great change in modern bridge-building has been effected by the introduction of iron and the use of chain or suspension bridges, the principles of which, it should be observed, were understood as early as 1615. See Scamozzi's *Del Idea Archi*. [CHAIN BRIDGE.] The most remarkable bridge of this kind is the Menai or Beaumaris bridge, near Caernarvon, which connects the island of Anglesea



[The centre arch of the Menai or Beaumaris Chain Bridge—for dimensions, see end of the article.]

with the main-land opposite. A similar bridge has been constructed over the Thames at Hammersmith, near London. Very similar to this bridge is the Chinese chain-bridge on the high-way of Yunnan, in the province of Koeitchou, the work of General Pan-ho. (Duhalde, vol. i. p. 60.) Suspension bridges have also been thrown over the Seine at Paris: the first that was erected there fell down almost immediately after its completion. Numerous bridges of this description have been made in Great Britain within the last 20 years, of which the late Mr. Telford constructed by far the larger part.

The merit of having first employed iron in bridge-building is attributed to the English, but it really belongs to the Chinese. (Duhalde, vol. i. p. 60.) The first iron bridge built in England was erected in 1779 at Coalbrook-dale over the Severn: it consists of one arch upwards of 100 ft. wide, composed of five ribs, each rib formed of three concentric arcs, connected together by radiating pieces. The interior arc forms a complete semicircle, but the other arcs extend only to the sills under the road-way. These arcs pass through an upright frame of iron at each end, which serves as a guide, and the small space in the haunches, between

the frame and the outer arc, is filled with a ring about 7 ft. in diameter. On the top of the ribs cast-iron plates are laid to sustain the road-way. The interior ring is cast in two-pieces, each piece about 70 ft. long; and the total weight of metal used is 378½ tons. (Nicholson's *Dict.*) Since 1779 many iron bridges have been constructed in Great Britain, and some few on the continent. The largest iron bridge yet made is that of three arches, from the Southward side of the Thames to Queen-street in the city of London. Mr. Telford proposed to erect an iron bridge of one arch only over the Thames at this place.

Bishop Wearmouth bridge, which is also of iron, was erected between 1793 and 1796. It consists of a single arch 240 ft. span. The bridge over the Severn, at Buildwas, built by Mr. Telford, is a single arch 130 ft. span, and 27 ft. in height from the springing to the intrados. Vauxhall bridge over the Thames at London, is one of the lightest constructions in iron with which we are acquainted. Smaller bridges of iron are now common enough over narrow streams, and over the entrances of docks: they are sometimes of one leaf or part, and sometimes consist of two leaves. Those made of one leaf turn on a centre, or a series of balls or

rollers: those which consist of two parts turn 'on a number of concentric rollers, which move between two circular cast-iron rings very nicely turned; each leaf or part has a flap, which lets down by a screw, and abuts upon the stone-work on either side, forming the whole bridge, when shut, into an arch capable of bearing any weight which can possibly pass over it.' (Nicholson's *Dict.*) A bridge of this kind at the London Docks, which weighs 85 tons, is opened and shut again in three minutes. The most recent bridge, and the largest yet constructed of this kind, is the bridge at Lowestoft in Norfolk, over the new cut which connects lake Lothing with the sea.

The following are the dimensions of several of the principal bridges of Europe as near as we can ascertain them.

Length and number of arches of a few of the principal Bridges of Europe and America.

	Feet.	Arches.
London bridge	900	5
Southwark	850	3
Blackfriars'	995	9
Waterloo	1326	9
Westminster	1220	15
Vauxhall	806	9
Menai, the span of the centre arch	560	3
Suspension bridge over the Severn at Buildwas	130	1
Sunderland iron bridge	236	1
Coalbrook-dale iron bridge	100, 6in.	1
Burton-upon-Trent	1545	34
Bridge over the Liffey, Dublin	106	1
Elbe bridge, Dresden	1490	16
Schaffhausen, on the Rhine	390	1
Pont Neuf, Paris	1020	12
Pont de Neuilly	724	5
Kumenoimost over the Moskwa at Moscow	340	6
Bridge at Lyons, over the Rhone	1700	19
New bridge at Turin	525	5
The Rialto, Venice nearly	100	1
Bridge over the Garonne, at Bordeaux	1593	17
Bridge of Orléans, over the Loire	1100	9
Pont d'Austerlitz, at Paris	106	1
Ponte della Trinità 160 paces	480	3
Pons Senatorius, now Ponte Rotto, at Rome	895	5
The Schuykill, called Colossus	340	1
The Trenton, over the Delaware	716	5

Aliberti is perhaps the earliest writer on bridges, and he has been followed in a great measure by Palladio, Serlio, and Scamozzi. For information on bridges the reader may consult Mr. Gautier's work, Belidor's *Architecture Hydraulique*, and Perronet; also Bosset and Rion on bridge-building. Mr. Telford's work on bridges, which it is understood will be shortly published, is expected to contain much valuable information. Müller, Labelye, Atwood, Sempé, Emerson, and Dr. Hutton, have also written on bridges.

BRIDGE HEAD, or *Tête de Pont*, is a fortification covering that extremity of a bridge which is nearest to the position occupied by the enemy, in order, by securing the line of communication, to facilitate the advance of an army or protect its retreat.

When a bridge is built across a riv. which runs through or along one side of a fortified town, the ramparts of the town in the one case, and those constructed for the defence of any buildings beyond the riv. in the other, may be considered as constituting the bridge-head; and then the works enter into the class of permanent fortifications. In other circumstances their form depends upon the nature of the ground, and upon the importance of the pass to be secured. If a retreating army is likely to be exposed to a serious attack when about to cross a riv., the works must be strong enough to keep the enemy in check, and sufficiently extensive to contain the whole army, till the passage can be effected.

The simplest kind of bridge-head is one which has the form of a *redan*; that is, a breast-work, with two branches disposed on the plan like the sides of the letter A, and terminating on the bank of the riv. But when a more perfect defence is required, the bridge-head may have the figure of a horn-work, or of a fort with bastions; the area occupied by the defenders being inclosed, except at or riv. side, by the rampart or breast-work. When

however the bridge-head is to be sufficiently capacious to serve as an intrenchment for the whole of an army, it may consist of a series of redoubts flanking each other reciprocally, and disposed on a curve line whose extremities rest on the riv.; and whatever be the nature of the work, when its capacity is considerable, it is recommended to have a *redan* or small fort immediately covering the bridge, with its faces so disposed that the fire from thence may defend the intervals between the exterior redoubts. This will also serve as a retrenchment in which, after the main body of the army has passed over the riv., a small division may be stationed to protect the retreat of the troops employed in defending the principal works. The passages by which an army or detachment, in retreating, enters a bridge-head consisting of a continuous parapet, should be situated in the re-entering angles of the work, if such there be, where they may be well flanked by crossing fires from the collateral faces: and they should be defended by a direct fire from traverses in the interior.

To prevent the enemy from advancing towards a bridge along the bank on which the works are situated, that bank both on the right and left of the bridge should be well defended by a fire of musketry or artillery; consequently the parapets adjacent to the riv. should be as nearly as possible perpendicular to its direction. And it is evident that the most favourable situation for a military bridge is at a bend of the riv. where the concavity is towards the enemy's position; for the fortifications will thus conceal the bridge from his view; and on either side of the work the batteries intended to defend the ground immediately in front may be directed towards the riv., by which they will be secure from an enfilading fire of the enemy.

Should any commanding ground permit the enemy to direct a plunging fire of artillery upon the bridge or upon the works, and should it be found impossible to give to the parapets a height sufficiently great to intercept that fire, batteries or redoubts must be constructed in convenient situations on the rear side of the river, in order, by their fire, to prevent the enemy from occupying that ground. These works will also serve to defend the faces of the bridge-head when attacked; a traverse also should be raised on the same side of the river perpendicularly to the length of the bridge, in order to enfilade the latter in the event of the enemy attempting to force a passage over it before it can be destroyed.

When there are islands in the river it is advisable to establish the bridges so that they may connect the islands with the opposite banks, for thus the bridges, being shorter than if they were to extend quite across the river, may be more numerous; consequently the passage of the river will be facilitated and more effectually defended. There should be a separate head for each bridge besides the general head on the farther bank; and any collateral islands, if such there be, should be fortified, both to prevent the enemy from occupying them and thus obtaining a view of the bridge, and to afford the means of flanking the principal head.

The most important bridge-heads in Europe are on the Rhine, at Mannheim, Kehl, and Huningen; all these have been celebrated in the wars of which the frontiers between France and Germany have so frequently been the theatre.

BRIDGE, MILITARY. [PONTOON.]

BRIDGNORTH, a bor. and m. t. in the S.E. part of Shropshire, on the Severn, 19 m. S.E. by E. from Shrewsbury, and 139 N.W. from London. The town lies on both sides of the Severn, which are connected by a bridge; but the larger portion is on the W. bank, built on a hill which rises 60 yards from the bed of the river. The bor. and town were co-equal, consisting of the parishes of St. Leonard and St. Mary Magdalen, but certain liberties were also under the jurisdiction of the bor. magistrates. The parliamentary bor. was extended by the Reform Bill, and now includes the parishes of Quatford, Oldbury, Tasley, and Astley-Abbots. In 1831 the pop. comprehended within the extended boundary was 6171, that of the old bor. 5298.

Bridgnorth, antiently Bruges, is stated to be of Saxon origin. The first known charter is one of the 16th John, confirmed by subsequent grants, by which special privileges were secured to the inhabitants. By the Municipal Reform Act the town council consists of 4 aldermen and 12 councillors, but the town is not divided into wards. The bor. returns two members. In the par. of St. Leonard there

are four daily schools, one of which is an endowed grammar-school, and two boarding-schools; in St. Mary Magdalen's there are four daily schools and three Sunday schools; and there is a daily school in Quatford parish. The appointment of the master to the grammar-school was vested in the corporation. The town contains a considerable number of charities. It possesses also two or three manufactories, and a large portion of the labouring class find employment in the navigation of the Severn; but the market and the retail trade with the neighbourhood afford the principal source of profit to the inhabitants. The market day is Saturday. There are four annual fairs, on the Thursday before Shrove Tuesday, 20th June, August 2nd, October 29th (which latter lasts three days), for cattle, sheep, butter, cheese, bacon, &c.

The situation of Bridgnorth renders it airy and healthful. Charles I. is said to have considered it the most pleasant place in his dominions. The prospect from the top of the hill is delightful. There is a curious walk made from the high part of the town to the bridge, being hewn to the depth of 20 ft. through the rock; the descent is great, but it is made easy by steps and rails. Until 1797 the corporation maintained the bridge out of the proceeds of certain estates and tolls. In that year, the bridge having fallen into decay, an act was obtained by which commissioners were appointed with authority to borrow money to rebuild it and to manage the trust. A new gaol was built in 1823. In Leland's time, the castle, on the S. side of the town, was of considerable extent; but when Grose visited the place, there was nothing left but what seemed part of a tower, which by undermining was made to incline considerably from the perpendicular. It is uncertain when or by whom the castle was built.

In 1102 Robert or Roger de Belesme, Earl of Shrewsbury, strengthened Bridgnorth and defended it against Henry I. In 1156-7 Henry II. besieged it in person, when his life is stated to have been saved by a knight, who stepped forward and received in his own person an arrow aimed at the king. The inh. sided with Charles I. during the civil war; and Bridgnorth endured a siege of nearly a month from the parliamentary troops.

The inh. to the E. of Bridgnorth are very little connected with it. They are separated from the town by a tract of hilly and thinly-peopled country, and their chief market is Wolverhampton. (*Beauties of England and Wales; Boundary Reports; Municipal Corporation Report; Education Returns.*)

BRIDGETOWN. [BARBADOES.]

BRIDGEWATER, a port, bor., and m. t., situate on the banks of the riv. Parret, in the hund. of N. Petherton, and co. of Somerset, 29 m. S.W. from Bristol, 17 W.S.W. from Wells, and 125 W. by S. from London, and in 51° 7' N. lat. and 2° 59' W. long. The limits of the bor. are co-extensive with those of the par., the area of which is 3580 English statute acres.

Bridgewater, in antient charters called Brugia, or Brugie, Brugg-Walter and Burgh-Walter, derives its name from Walscin or Walter de Douay, on whom it was conferred by William I. Prior to this it belonged to a Saxon Thane, named Merlesuain, as appears from Domesday Book, in which it is thus surveyed: 'Walscin holds Brugie, Merlesuain in the time of King Edward, and gelded for five hides. The arable is ten carucates, in demesne are three carucates and five servants, thirteen villanes, nine bordars and five cottagers, with eight ploughs. There is a mill of 5s. rent, and ten acres of meadow and 100 acres of pasture. When he received it, it was worth one hundred shillings, now seven pounds.'

William de Briwere, to whom the manor had been granted by Henry II., built a castle at Bridgewater of considerable strength, and through his interest with King John obtained for the town a market and a fair. This William de Briwere also founded the hospital of St. John, for the benefit of the souls of Kings Henry II., Richard I., and King John, consisting of a master, brethren, and thirteen poor persons of the order of St. Augustine. This hospital had very large possessions, and was confirmed by Joceline, Bishop of Bath, in the year 1219. Leland, who visited it in 1538, describes it thus: 'In the Est part of the Town is onely the House, late College of St. John, a thing notable, and this house standith partly without th' est gate. This college had prestes that had the apparell of secular prestes, with a cross on their breste, and to this house adjoined an

Hospice for poor folks.' It appears from the Harleian MSS. in the British Museum, that William Lord de la Zouch and Seymore, and Richard Duke of York and Earl of Ulster, and Lord of Wigmore and Clare, were patrons in 1457. Its revenues at the time of the dissolution of monasteries amounted to 120l. 19s. 1½d. In the W. part of the town was a priory of Minorites or grey friars, dedicated to St. Francis, founded by a son of William de Briwere, the site of which was given to one Emmanuel Lukar by Henry VIII. There was also in Leland's time an hospital for lepers. The founder of St. John's hospital also commenced a stone bridge with three arches across the riv. Parret, but it was only completed in the reign of Edward I., by Sir Thomas Trivet, 'whose arms being a trivet,' says William of Worcester, 'were affixed to the coping of the structure.'

Bridgewater was one of the towns that were taken by the barons during their revolt against King Henry III. In the civil wars it stood out a long time for the king. The castle was strongly fortified, having forty large guns mounted on the walls, and a moat of great depth and 30 ft. wide, which every tide filled with water. Colonel Wyndham, the governor, defended it a long time against the rebels; but at last, on the 22nd of July, 1645, he was compelled to surrender. Upwards of 1000 prisoners, 44 barrels of powder, 1500 arms, 44 pieces of ordnance, and a great quantity of jewels, plate, and other articles of immense value, that had been sent to the castle for safety (it having been declared impregnable), were taken by the besiegers, amongst whom the booty was divided. The castle was completely dismantled, and the only remains of it are the sally-port and some small detached portions of the walls.

The inhabitants of Bridgewater supported the claims to the throne of the Duke of Monmouth, a natural son of King Charles II., and he was proclaimed king by the mayor and corporation.

The elective franchise was conferred on Bridgewater by Edward I., in the 23rd year of his reign, since which time it has returned two members to parliament. Its first charter was granted by King John, on the 26th of June, 1200, and twelve other charters were granted to it between that time and 1683. There is a civil court, or court of record, the jurisdiction of which extends to all personal actions and to any amount. The court sits from Monday to Monday; but as the expenses are very heavy, very little business is done. There are also petty sessions every Monday. The July county sessions are held here, and the summer assizes alternately with Wells.

The town is pleasantly situated, about 9 m. from the sea, in a level but well-wooded country; to the N.E. are the Polden and Mendip Hills, and on the W. the Quantock Hills. The riv. Parret, over which there is a handsome iron bridge, divides the town into two parts. The W. part is the more respectably inhabited; the streets are well lighted with gas and paved, and the houses are generally good; some are built of brick, and others of a good, durable carboniferous limestone found in the quarries of the neighbourhood. The other part of the town, called Eastover, is little more than a suburb, and is meanly built. The town-hall is a good building, and well adapted for business; over it is a cistern with an engine by which the inhabitants are supplied with water. The gaol is very convenient, and has separate divisions for the male and female prisoners.

The interior of the parish church dedicated to St. Mary is handsome, consisting of a nave, chancel, and two side aisles. The outward part of the structure is mean and ill-built; there is a tower at the W. end, surmounted by an ill-proportioned spire. The altar-piece, which is much admired, was presented by the Honourable A. Poulett, many years member for the bor. It represents the descent from the cross, and was found on board a captured French privateer. The painter of it is uncertain. The living is a vic. united with the rec. of Chilton Trinity, in the arch-deaconry of Taunton and diocese of Bath and Wells. The crown is the patron of the living, the net income of which is 342l.

The riv. Parret is navigable as far as Bridgewater for vessels of 200 tons; but it is subject, like some other rivs. in the Bristol channel, to a rise of nearly six fathoms at spring tides. The flow of the tide is preceded by a head water commonly termed the 'bore,' [Bore] which often produces much inconvenience among the shipping. The principal imports to Bridgewater are coals, twine, hemp, tallow, and timber. Coals are imported from Wales, and conveyed into the in-

terior of the country by means of the riv. Parret and a canal. The former is navigable as far as Langport; the canal runs to Taunton, and thence into Devonshire. The foreign trade is principally with the U.S., Canada, Newfoundland, and the W. I. The number of vessels belonging to the port (as stated in the Report of 1828) was forty, of an average burden of sixty tons. Many of the inb. are occupied in the fabrication of a peculiar sort of white brick, which is made of all sizes, and the common brick. The great market-day for provisions, and especially for cheeses, for which the neighbourhood is celebrated, is on Thursday. There are also smaller markets on Tuesday and Saturday. The market-house is a fine building, surmounted by a dome and a lantern. Fairs are held here on the first Monday in Lent, the 24th of July, the 2nd of October, and the 27th of December. The fair on the 2nd of October, called St. Matthew's Fair, was heretofore the mart of Somersetshire and the adjoining counties, and is still of considerable importance.

The pop. of Bridgewater in 1831 was 7807, of which 4124 were females.

There are places of worship for Baptists, Quakers, Independents, Wesleyan Methodists, and Unitarians. The free grammar-school was founded in 1561, and endowed by Queen Elizabeth with 6*l.* 13*s.* 4*d.* per annum, charged on the tithes of the par., to which a donation of 200*l.* was afterwards added. It is under the control of the corporation, who appoint the master, and under the immediate inspection of the bishop of the diocese: four boys are taught gratuitously in the classics and four in English. In 1723 Mr. John Morgan founded a school (now conducted on Dr. Bell's system), and endowed it with lands to a considerable amount. The management of the school is vested in the hands of trustees, amongst whom are the archdeacon of Taunton and the vicar of Bridgewater: in 1816 a spacious school-room and a house for the master were erected. The present number of scholars is about thirty, some of whom are clothed. A school was also founded by Mr. Edward Tackerell, and endowed by him with the dividends of 3000*l.* in the funds, and the rents of certain messuages, amounting to 174*l.* per annum, for the clothing, educating, and apprenticing the children and grandchildren of certain of his relatives. The management of this school, which was the subject of a Chancery suit, is now in the hands of trustees, whose accounts are annually audited by a master in chancery. Several sums appear from the 'Reports on Charities' to have been left by will for the instruction of poor children: 52*l.* by Richard Holworthy; 41*l.* 10*s.* by Dorothy Holworthy; Richard Castleman left 200*l.*, and James Stafford 40*l.*,—all for the like purpose. Some almshouses endowed by Major Ingram with 18*l.* are now appropriated to the poor of the par., and the 18*l.* is distributed among poor widows not receiving parochial relief. An infirmary was established by subscription in 1813. In Willis's 'History of Abbeys,' several chantries are mentioned—St. George's chantry; the Virgin Mary's chantry, to which belonged ten messuages, eight acres of land, and 40*l.* 1*s.* in Bridgewater and Trinity chantry. Leland also mentions a chapel at the S. side without the town, 'which,' says he, 'was buildid in hominum memoria by a merchant of Bridgewater, cawllid Poel or Pole.'

Bridgewater was the birth-place of Admiral Blake, and he was educated at the free grammar-school there.

In the neighbourhood of Bridgewater is the Isle of Athelney. [ATHELNEY.]

(Collinson's *Somersetshire; Correspondence from Bridgewater; Leland; Harleian MSS.; Corporation, Ecclesiastical, and Charity Reports, &c. &c.*)

BRIDGEWATER, FRANCIS EGERTON, DUKE OF, born in 1736, was the youngest son of Scroop, fourth Earl and first Duke of Bridgewater, by Lady Rachel Russell, daughter of Wriothesley, second Duke of Bedford. He succeeded his brother, the second duke, in 1748. He was the heir of the Lord Chancellor Ellesmere in the sixth degree of descent. In his youth he was extremely thin and delicate, and his apparent predisposition to pulmonary complaints was so decided, that his education was entirely neglected. He not only got the better of this early tendency, which had proved very fatal to his family, but became a very strong man and extremely corpulent. As his bad health took him entirely out of society, he contracted habits of extreme shyness, which made him avoid company, especially that of ladies. But though the defects of

his early education and the singularity of his character were not infrequently exhibited, his mind was naturally of a most powerful and determined character, bordering perhaps occasionally on obstinacy; indeed it was owing to this quality, and his extraordinary enterprise, sagacity, and prudence, that he earned a title of far higher distinction than that which he derived from the accident of birth. One of the estates which he inherited, situated at Worsley, near Manchester, contained a rich bed of coal, but it was comparatively of little value, in consequence of the heavy expense of land carriage and the inadequate means of communication afforded by the Irwell, which, though rendered navigable, was a tedious and imperfect medium for carrying on an extensive traffic. In deliberating on the best means of supplying Manchester with coal from his pits at Worsley, the obstacles were so great as to lead him to consider a great variety of expedients for overcoming them. At length he fixed on the expedient of constructing a navigable canal, and in the 32nd Geo. II. (1758-9) he obtained, though not without some difficulty, the act of parliament which enabled him to commence the first navigable canal constructed in Great Britain in modern times. From this circumstance he is frequently styled 'the Father of British Inland Navigation.' It was the Duke of Bridgewater's determination to render his canal as perfect as possible, and to adopt a line which should render it unnecessary to have recourse to locks. The duke had the good fortune to select as engineer a man whose genius was unfettered by commonplace rules, and one who was exactly fitted to carry into execution a project, not only perfectly novel at the time, but which, even at the present day, would demand the highest practical science. [BRINDLEY.] The duke nobly supported Brindley in his bold and original views, in the merit of which he undeniably deserves to share. When Brindley proposed carrying the canal over the Mersey and Irwell navigation at Barton, by an aqueduct 39 ft. above the surface of the water, he desired, to the satisfaction of his employer, to have another engineer consulted. The duke was not deterred by the difficulties and magnitude of Brindley's plans, nor by the unfavourable report of the other engineer, from prosecuting the work under his direction. It is reported that the individual called in to give his opinion had said, on being taken to the place where the intended aqueduct was to be constructed, that he 'had often heard of castles in the air, but never was shown before where any of them were to be erected.' The duke was rewarded for his enterprising spirit and confidence in the successful completion of the work, which is 200 yards in length. From the aqueduct the spectator may often observe seven or eight men slowly dragging a boat up the Irwell, against the stream, while about 40 ft. immediately over the river a horse or a couple of men are enabled to draw with much greater rapidity five or six barges faster than one to the other. A considerable portion of the canal between Worsley Mill and Manchester was executed under the provisions of the first act of parliament, but a second act was obtained in the following year for the purpose of making some changes in the line. The whole of the canal from Worsley to Manchester, with the subterraneous works at the coal-mines at Worsley, was executed under these two acts: the underground canals and tunnels at Worsley are said to have cost 168,000*l.* and to be 18 m. in length. In 1762 a third application was made to parliament, and the necessary powers were obtained for opening an artificial water communication with Liverpool by the Mersey. Subsequent acts enabled the duke to complete his designs. The length of the main line is above 27 m. all on the same level, which has rendered great embankments necessary, as the canal crosses several depressions. One of these embankments is 900 yards long, 17 ft. high, and 112 ft. wide at the base. The main line from Manchester is in a direction a little to the S.W. for about 2½ m.: it then sends off a branch, in a N.W. direction, which crosses the Irwell at Barton, and runs to Worsley; from Worsley it continues 6 m. W. to Leigh; a canal also runs from Leigh and the Leeds and Liverpool can. at Wigan. From the point where the main can. sends off the Worsley branch, its course is nearly S., and it crosses the Mersey. On the Cheshire bank the general direction of the canal is more to the S.W. than the Mersey, but after crossing the river Bollin it approaches nearer the Mersey, until within about 3 m. of Preston-brook, when it leaves the river farther to the N. From Preston-brook, in the parish of Runcorn, it

course of the canal is at first N.W. and afterwards due W. until it enters the tideway of the Mersey at Runcorn by ten locks, which have a fall at low water of $82\frac{1}{2}$ feet. At Preston-brook the Grand Trunk Canal (the name by which this navigation is familiarly known in the country) joins the Duke of Bridgewater's Canal, which thus connects it with the Trent and with Birmingham and London, and with Bristol. With the exception of that part between Worsley and Leigh, every part of the canal was executed, under the direction of Brindley, in about five years. The aqueduct at Barton was opened July 17th, 1761, and soon afterwards the whole line. It cannot be computed what the total expense incurred by the Duke of Bridgewater in completing this great undertaking amounted to. The duke's canal however has done as much to promote the public prosperity as to increase the wealth of the noble projector's heirs. Before its construction coals were retailed to the poor at Manchester at 7d. per cwt., but after its completion they were sold at 3½d., and six score were given to the cwt. The carriage by water from Manchester to Liverpool was 12s. per ton; by land it was as high as 40s.; on the duke's canal the charge was 6s. per ton. The wealth which he was the means of creating was thus diffused among every class of his countrymen. When the line of his canal had been tripled in length, the duke never demanded larger tolls, but contented himself with the profits which the increase of traffic fairly brought him. The Duke was also one of the most zealous promoters of the Grand Trunk Navigation, and his brother-in-law, the first Marquis of Stafford, being at its head, they mutually aided each other. In the construction of his great work he had exhausted his credit to the utmost; he could not raise 500*l.* on his bill in the city of London, and his agent, Mr. Gilbert, had frequently to ride over the counties of Cheshire and Lancashire, from door to door, to raise sums, from 10*l.* and upwards, to enable him to pay the Saturday night's demand. At the same time the Duke restricted himself to the simplest fare, and lived with scarcely a servant to attend upon him. His great estates at Ellesmere, which he held in fee simple, were quite unencumbered, but no persuasion would induce him to resort to the easy method of relieving himself from difficulties by borrowing money upon them. When in London he would not undertake the trouble of keeping house; he therefore made an allowance of 2000*l.* to a friend of his, (Mr. Carvill,) with whom he dined, when not otherwise engaged, and to whose table he had the privilege of inviting his intimate friends.

The Duke of Bridgewater never took an active part in politics; but he was a decided friend to the Pitt Administration, and a large contributor to the Loyalty Loan. He died March 8th, 1803, and never having been married, his great wealth was distributed among the collateral branches of his family. The canal property, with the Lancashire, Cheshire, and Brackley Estates, he left to his nephew, the late Duke of Sutherland. They are now in the possession of Lord Francis Egerton, who has just (Feb. 1836) intimated to the authorities of Manchester his desire to erect a public monument in that town to the memory of the Duke of Bridgewater.

(Phillips's *History of Inland Navigation*; Priestley's *Historical Account of the Navigable Rivers and Canals, &c. of Great Britain*.)

BRIDLINGTON, formerly written **BRELLINGTON**, but now commonly pronounced Burlington, is a port and m. t. in the E. Riding of the co. of York, in the wap. of Dickering, in the par. of Bridlington, and in the township of Bridlington-quay. The pop. of the par. of Bridlington in 1831 was 5637: the pop. of the township of Bridlington-quay, including the m. t. of Bridlington and quay, was 4792. In the bathing season there are about a thousand additional residents. The par. of Bridlington comprises the following places:—the t. of Bridlington-quay, the t. of Buckton, the ham. of Easton, the chap. of Grindall, the t. of Hilderthorp, the t. of Sewerby and Marton, and the ham. of Speeton. The area of the par. is 12,410 acres. The town is about a mile from the E. coast. 'The face of the country as far as Bridlington is diversified with lofty swells, and the wolds in some places extend to the coast, which, near the villages of Speeton, Bampton and Flamborough, rise in cliffs of 100 or 150 yards in perpendicular height. At Bridlington the country sinks into a flat, which continues for 8 or 9 m. to the S. without almost any variation.' (Bigland's *Yorkshire*.) Bridlington is distant from London by Lincoln 203 m.; by York 238 m.; it is 40 m. E. by N. from York, and 32 m. N. from Hull. Its dis-

tance from London in a straight line is 167 m. It is one of the polling places under the Reform Act, for the election of Members for the E. Riding of the co. 54° 13' N. lat.; 0° 16' E. long.

Early History.—Bridlington is considered by some authorities to have been the site of a Roman station—*Gabrantovicorum*. The vicinity of Flamborough Head as a post for observation, the sheltered bay, the *Sinus Portuosus* of Ptolemy, and the direction of a Roman road from York and Aldborough, are all circumstances which strengthen the supposition. The remains which determine the exact sites of inland towns inhabited by the Romans, have here been long ago swept away by the encroachments of the sea. After the invasions of the Danes, and after the Saxons had established themselves in Britain, the N. portion of the country was the last subdued; nor was this effected until the landing at Flamborough of Ida, A. D. 547. Whether the tumuli which abound throughout this district were raised during the time of the Saxon invasions, at an earlier or a later date, is still matter of speculation. The generally received opinion is that they are remnants of a time prior to the Roman invasion; and late discoveries are in favour of this opinion. On the 10th of July, 1834, a tumulus was opened at Grithorpe, near Flamborough cliff, a description of which has been published by Mr. Williamson, who infers from its contents that the person entombed therein was 'one of the aborigines of the soil.' The coffin was of oak, and of the rudest shape and structure; the interior having been hollowed out apparently with chisels and hatchets of flint. The body within the coffin was enveloped in a strong skin, which is supposed to have been a part of the man's dress when living. No pottery was found. Flint heads of arrows, and of a javelin, pins of horn, bone and wood, and the fragment of a horn ring, were among the contents of the coffin; in addition to which was a spear-head of brass, or some other composition of metal. The body is considered to have been about 6 ft. 3 in. in height, and its muscular attachments are very strong. The coffin and its contents are placed in the Scarborough museum.

When William the Norman ravaged the country for 60 m. between the Humber and the Tees, the monastery of St. John of Beverley alone escaped the general ruin, owing to the veneration in which the patron saint was held by the Conqueror; the ravages far exceeded those of the Danes three centuries before. The manor of Bridlington formed part of the extensive possessions of Earl Morcar, and was confiscated in 1072. This manor, as well as large grants in Lincolnshire, was conferred on Gilbert de Gant, a nephew of the Conqueror, and son of Baldwin, Earl of Flanders. The possessions of Gilbert de Gant descended to his son Walter.

Ecclesiastical History.—To Walter de Gant Bridlington owes the foundation of its priory, the most distinguishing feature in its early history. The revenues with which this monastic establishment was endowed were on a scale of munificence correspondent to the rich possessions of its founder. When completed, probably in 1114, it was peopled with canons regular of the order of St. Augustine. The monastery was dedicated to St. Mary and St. Nicholas. The charter of Walter de Gant, and the confirmatory charter of Henry, are in Dugdale's *Monasticon*; and the bull of Pope Calixtus II., confirming all the grants, is preserved among the MSS. of Roger Dodsworth, in the Bodleian library at Oxford. These documents are given at length in Prickett's *Historical and Architectural Description of the Priory Church of Bridlington*. The estates of the priory were of immense extent, and included not only lands in its vicinity, but also in many other parts of Yorkshire, and in Lincolnshire. Gilbert de Gant, the son of the founder, was a great benefactor to the priory; and many other nobles added liberal donations to its wealth. Henry I. granted to the prior a full and complete civil jurisdiction over the manor and town. Stephen granted them a jurisdiction over the port and harbour. John granted them an annual fair, and a weekly market. Richard II. granted them his license to enclose the priory with walls and houses built of stone and lime, in order to defend themselves from the ships of enemies which entered the har. Other kings granted them additional favours and protections. A summary of the possessions of the priory is given in Burton's *Monasticon Eboracense*. The canons were careful to have their grants confirmed, in many instances by the heirs of the donor, the archbishop of the province, the king, and the reigning pontiff. The

monks of Bridlington are often mentioned in early histories; and several of them were eminent for piety and learning. Mr. Whitaker, the historian of Craven, speaks of 'the religious' as attendants at the great annual fairs held in different parts of the country. He says, 'the canons of Bridlington regularly attended the fair at Boston every year, between 1290 and 1325. In the *computus* of the priory at Bridlington is a yearly account of wine, cloth, groceries, &c., bought 'apud sanctum Botolphum.' The last prior, William de Wode, was installed in 1581; having taken an active part in a rebellion soon after the suppression of the lesser monasteries, he was attainted of high treason and executed at Tyburn, A. D. 1537. William of Newburgh was a native of Bridlington, though a canon of Newburgh. His *Historical Chronicle* commences with the Norman conquest, and is carried down to the reign of John.

The monastery existed four centuries; when it was dissolved its revenues amounted to 550*l.* per annum, an immense income at that day. In 1539 it was demolished, and the manor and rectory became the property of the king, by whom they were granted on lease to various individuals; eight pounds a-year being assigned to be paid by the lessee for the maintenance of a parish priest. In the time of Charles I. the manor and rectory were separated and sold to different persons; the latter passed through several hands, and is now a perpetual curacy of 143*l.* per annum.

History.—In 1643, during the differences between Charles and his parliament, Bridlington became the scene of temporary hostilities. The queen, who was bringing a supply of arms and ammunition from Hellevoetsluis, under the convoy of Admiral Van Tromp, arrived in the bay, having narrowly escaped the squadron under the command of Admiral Batten, who had been stationed to intercept her. After her landing, Batten entered the bay with two of his ships, and for some hours the town was subjected to his cannonading; he was then obliged to put to sea, as the ebb of the tide would have left him in shoal water. A lively sketch of this transaction, from the pen of the queen, is given in Thompson's *Historical Sketches of Bridlington*, which is taken from the *Gentleman's Magazine* for August, 1744. A hostile squadron, under the celebrated Paul Jones, visited Bridlington on the 20th September, 1779, soon after his descent upon Whitehaven. On the following night by moonlight an action commenced, so near to Flamborough Head, which was crowded with spectators, that some of the balls grazed the cliffs. The conflict was between the four ships of Jones and the convoy of the Baltic fleet, the *Serapis* and the *Countess* of Scarborough. The action, which was very sanguinary, lasted several hours, when the two convoy vessels struck. Jones reached the Texel safely with his prizes.

The Priory Church.—This venerable and splendid specimen of ecclesiastical architecture has been well judged worthy of a description and illustrations. A few general observations and extracts from Mr. Prickett's work may be made here, but can convey no adequate idea of these remains or of their former beauty. The nave and an arched gateway leading to it are the only parts now left of the once spacious monastery. The W. front has had two towers, of which the lower stories only remain. This front still retains a great degree of architectural magnificence, and is in the style of the beautiful collegiate church of Beverley. 'The date, 1106, preserved on a stone placed very conspicuously over the entrance, is supposed to mark the year of its foundation.' (Bigland's *Yorkshire*.) 'The grand western entrance is an exquisite specimen of the architecture of Henry VII.'s time; excepting however the north-western tower, which belongs to a much earlier period.' 'The style of the north-western tower is early English, as is also the whole of the north side of the church.' 'The west window is 55 ft. in height from its base to the crown of the arch, and 27 ft. in breadth. The head is filled with good perpendicular tracery; the lower compartment below the transom is the only portion at present glazed, and is 15 ft. high. Along this there is a gallery connecting the two western towers; and it is remarkable that the upper part of the window is 2 ft. wider than the part below the transom.' 'The north porch is a truly splendid specimen of architecture, and perhaps better worth preservation than any other part of the fabric; but it has been sadly neglected, as the entrance is seldom used, and the earth has been suffered to accumulate so much against the whole of the north side of the church that there is now a descent of several steps into

the porch.' 'The length of the present church in the interior is 185 ft.; and the distance of the farthest pillar from the east wall of the church, whose foundation has been taken up, 162 ft.; so that the ancient church seems to have been nearly of the same length as Beverley minster, about 333 ft.: its breadth is 68 ft., and height about 60 ft.' 'An octagon turret with its leaden cupola, which was erected (for the reception of the bells) 'on the top of the basement of the south-west tower is as anomalous and disfiguring as can well be conceived.' About one-third of this church is fitted up for public worship, and will contain nearly a thousand people. (*An Historical and Architectural Description of the Priory Church of Bridlington*. By the Rev. Marmaduke Prickett.)

The dissenting congregations in Bridlington are two of Wesleyan Methodists, one of Baptists, one of Independents, one of Quakers, and two of Primitive Methodists. A chapel called 'the Union' is used by persons of different denominations. The Wesleyan Methodists have two Sunday schools, which contain 300 children; the Independents' Sunday school contains 80 children; and there are other Sunday schools of minor importance.

Education, Charities, Commerce, &c.—In the year 1634 William Hustler, an inhabitant of Bridlington, left a sum of 40*l.* to be paid annually out of his estates for the maintenance of a schoolmaster and usher. The children of the par. were to be taught grammar and other useful kind of learning. For some time the office of schoolmaster was held by the minister or curate of the par., and that of usher by the parish-clerk. By a decree in chancery in 1819 the two offices were united, the inh. having represented that the office of master had become a sinecure in consequence of the non-residence of the minister. The present master is also the parish-clerk: he instructs 20 boys, children of poor parishioners, in grammar, reading, writing, and arithmetic, on this foundation; he also takes paying pupils. Another school was founded by William Bower in 1781, with 20*l.* per annum for ever 'for maintaining and educating the poor children of Bridlington and Key in the art of carding, knitting, and spinning of wooll.' Twelve children of poor parents receive instruction in this school. Henry Cowton by will dated April, 1696, left the rent of certain lands for charitable purposes: these lands at present let for 170*l.* per annum. (Thompson's *Historical Sketches*.) In 1734 Timothy Woolfe bequeathed by will the sum of 500*l.* to purchase land, the rent of which is to be distributed among the poor for ever; and in 1795 Isaac Wall bequeathed the interest of 1000*l.* 3 per cent. consols to be distributed among the poor for ever. (Prickett's *Description*, Appendix.) The national school was commenced in 1818. In the year 1822 a grant of 300*l.* having been made by the National Society, the inh. raised a sufficient sum for the erection of two school-rooms, one for boys and one for girls, each capable of containing 200 children. The schools were opened in 1822, and nearly 300 children are educated in them. An infant school was established in 1828, chiefly by the active benevolence of an occasional resident, which is well managed and contains 100 young children. In addition to these schools there are about 20 others, including day and boarding schools. There are two public subscription libraries, and a small museum. The town-hall is over the price gateway; the lower rooms of the gateway are used as a prison; the corn-exchange is in the market-place. The town was first lighted with gas in the year 1833.

The streets are narrow and irregularly built, and the whole appearance is that of an old town. The trade is chiefly in corn, and was formerly very extensive: large quantities were brought hither from the great agricultural tract bordering the Wolds and from Holderness, and it was conveyed from this port coastways to London. The opening of the navigable can. from Driffield to Hull has caused the corn-trade of Bridlington to decline. It is one of the places which has an inspector of corn-returns, and weekly accounts of the quantity and price of grain sold are transmitted to the general inspector in London. Malt and ale were formerly articles of considerable traffic; in 1761 there were 60 malt-kilns in constant use: this trade has very greatly declined. Soap-boiling and bone-grinding for the purpose of manure [BONE] are now carried on, and the manufacture of hats employs a few persons. These occupations, the retail business necessary for the supply of an extensive agricultural district, and the influx of summer visitors, are the chief means which contribute to the support of the inh.

The imports are chiefly coals from Sunderland and Newcastle, timber from America and the Baltic, and general merchandise from London and Hull: the port is a member of the port of Hull. Two fairs are held annually in a large open area between the priory gate, called also the Bayle Gate, and the church. This area is called the Green, and is supposed to have been the antient market-place. On the S. verge stands the par. poor-house, a large old building, said to be 'unhappily crowded with inmates.' At a short distance are two circular mounds of earth 104 yards asunder, called butt-hills, thrown up for the practice of archery before the introduction of fire-arms. (*Historical Sketches.*)

BRIDLINGTON QUAY is a small modern town in the recess of the bay on the sea-coast, the principal street of which runs directly to the har. and is very wide. The N. pier commands a view of Flamborough Head at 5 m. distance. There is good anchorage in this bay, particularly when the wind is unfavourable for coasting-vessels proceeding round Flamborough Head N. The amusements of Quay during the bathing season are chiefly those of riding and sailing. The beach has a fine hard sand, which affords a good walk at low water. There are warm and cold sea-water baths for invalids and rooms which possess all the requisite accommodations. At a short distance there is a chalybeate spring of reputed efficacy, resembling the waters of Scarborough and Cheltenham, but not so purgative. An ebbing and flowing spring, which was discovered in 1811, furnishes an abundant supply of water of remarkable purity. This spring was discovered in 1811 by the late Benjamin Milne, Esq., collector of the customs at this port; a man who, for this and other services, is justly entitled to rank first among the benefactors of Bridlington. The fossils of the chalk cliffs near Bridlington are numerous and well known. A few years ago a head of the great extinct elk with branching horns, measuring 11 ft. from tip to tip, was found in the lacustrine deposit in this vicinity. The peat bogs and shell marl deposits in which the remains of this noble extinct animal have been found in Ireland, Scotland, and the Isle of Man, are extremely similar to the lacustrine accumulations of Holderness. The entrance to the port and bay is defended by two batteries, one on the S. side of the town, mounting 6 guns (18-pounders), and the other on the N. side, mounting six guns (12-pounders). These batteries enfilade the mouth of the har. and form a cross-fire with each other at right angles. The environs of Bridlington and Quay are exceedingly beautiful. On the 17th February, 1836, Bridlington was visited by one of the heaviest storms ever known. Several houses were destroyed, others much damaged, and the piers were much injured. (*Historical Sketches of Bridlington*, by J. Thompson; Prickett's *Description of the Priory Church of Bridlington; Communication from Bridlington, &c.*)

BRIDPORT, a bor. and m. t. in Dorsetshire, on the highway from London to Exeter, and distant from London by the road, about 135 m. It appears from a notice in Domesday Book, to have been a considerable place before the Norman Conquest, and has been noted from an early period for its hempen manufactures: the soil in the surrounding country being strong and deep, formerly produced excellent hemp. That now used is imported principally from Russia. There is an old saying in allusion to a man who has been hanged, 'He has been stabbed with a Bridport dagger,' which shows the antiquity of the manufacture of hemp at Bridport.

The earliest charter of which any certain memorial remains is dated the 22nd June, 37 Hen. III. This charter received subsequent confirmations,—the governing charter was dated the 15th Aug., 18 Charles II. By the Municipal Reform Act, Bridport is divided into two wards, and has 6 aldermen and 18 councillors. The town is lighted by gas. Queen Elizabeth, in her 36th year, granted to the bailiffs and burgesses a market on Saturdays, on which cattle might be sold, from the Friday before Palm Sunday to Midsummer-day; and three fairs, viz., on March 25th, on Holy-Thursday and two following days, and on Michaelmas-day, with a court of pie-poudre. The profits and tolls of the fairs and markets average about 203*l.* annually. The present market-house was built under an act obtained in 1785.

The prosperity of Bridport is materially dependent on that of the harbour, which is at the mouth of the riv. Brit, about a mile from the town, the communication being by an excellent road. Many efforts have been made to improve

this harbour. In 1316, one John Huderfield obtained from Richard II. a grant, for improving the port, of a half-penny toll for every horse-load of goods imported or exported here. Other attempts were unsuccessfully made, but the haven was repeatedly rendered almost useless, by the tides barring it up with sand. In 1732, an act was obtained, of which the preamble states, that by reason of a great sickness, which swept away the greatest part of the most wealthy inhabitants, and other accidents, the haven became neglected and choked with sand, the piers fell to ruin, and the town consequently to decay. The works, for which this act was obtained, were not begun till 1741, and the pier was finished in 1742, towards the expense of which the two representatives of the borough contributed 3500*l.*, an individual 1000*l.*, and the town 500*l.* Further improvements were made in 1756, sluices were constructed, the fresh-water bayed back, and at the ebb of the tide discharged with rapidity, in order to scour the sand. Until 1822, the corporation were the exclusive trustees of the harbour; but in that year a new act was obtained for its improvement, by which, besides the bailiffs and burgesses, many individuals were made commissioners for the execution of the act. This act fixed a maximum of tonnage dues on vessels, and of dues to be received on exports and imports. A sum of 17,800*l.* was borrowed, and together with the surplus dues applied to the improvement of the harbour, which has thereby been rendered safe and commodious for shipping not exceeding 250 tons burthen. The trade of the port is rapidly increasing. In 1804, the number of vessels which entered was 128, their tonnage 9926, the harbour dues 459*l.* In 1833, it stood thus:

	INWARDS.		OUTWARDS.	
	Vessels.	Tonnage.	Vessels.	Tonnage.
Foreign trading vessels	27	2,404	15	452
Coasting trading vessels	233	21,722	114	6,575

Bridport was made a bonding port in 1832. The total amount of harbour duties in 1833 was 522*l.*

The staple productions of the town are twine, lines, and fishing-nets. Of late years the manufacture of sail-canvas and shoe-thread has become extensive. The exports consist principally of these manufactures, and of butter, for which the county of Dorset is celebrated; and the imports of hemp, flax, deals from the Baltic, wines, spirits, skins, coals, culm, and slates. The town is also celebrated for the skill of its ship-builders.

The pop. of the bor. and par. of Bridport, which were formerly co-extensive, has considerably increased since the beginning of the present century. The pop. of the new bor. created by the Reform Bill, which is more extended than the old one, cannot be ascertained with certainty, but is probably about 7000. The borough returns two members to Parliament.

The old mail road from London to Exeter passes through Bridport, and forms the main street. The principal streets are spacious, and tolerably well built. The church of St. Mary's, near the lower end of South-street, is an antient building, in the form of a cross. There are four dissenting chapels. There were several religious foundations and chantries, few relics of which now appear. In the bor. and par. there are sixteen daily schools, one of which contains eighty-two children, and is supported by an endowment. There are four Sunday schools, all supported by voluntary contribution. Within the last two years a mechanics' institute has been established, and handsome and commodious reading and lecture rooms have been erected. (*Hutchins's Dorset*, corrected by Gough and Nichols; *Boundary Reports; Municipal Corporations Report; Education Returns.*)

BRIE, a district in France comprehended partly in Champagne, and partly in the Ile de France. It extended from the banks of the Seine toward the N.E.; its dimensions were, greatest length N.E. and S.W. nearly 70 m.; greatest breadth measured nearly at right angles to the length about 65 m. (*Atlas to Encyclop. Method.*) It was formerly divided into *Brie Françoise*, *Brie Champenoise* (subdivided into Upper and Lower Brie), and *Brie Pouilleuse* afterwards incorporated with Brie Champenoise. The whole was bounded on the N. by the Ile de France (proper), Valois, and Soissonnois, on the E. and part of the S. by Champagne proper, on the remaining part of its S. frontier by Senonois, and on the W. by Hurepoix, from which it was divided by the Seine. The chief towns within its limits (with their pop. in 1832) were as follow:—

	Town.	Communa.
<i>Brie Française.</i>		
Brie Compte Robert	2658	2762
Corbeil	3708	
Lagny	1865	1869
Rosoy		
Montereau	4048	4153
<i>Brie Champenoise.</i>		
Upper Brie		
Meaux	8481	8537
Coulommiers	2645	3335
Crécy		
Jouy		
Lower Brie		
Provins	5665	
Sezanne		
La Ferté Gaucher	1553	1930
Bray or Brais sur Seine	1992	
Villenoxe La Grande	2430	
Donnemarie		
Anglure		
<i>Brie Pouilleuse.</i>		
Château Thierry	3749	4697
Montmirail		
La Fère en Tardenois	2069	2313
La Ferté sous Jouarre		
Nogent l'Artaut		

Brie had antiently its own feudal lords, who bore the title of counts of Meaux; but Herbert of Vermandois, count of Meaux or of Brie, having become count of Troyes or Champagne in the 10th century, united the two countries. Brie ever after followed the fate of Champagne. The territory is now divided between the dep. of Aisne, Aube, Marne, Seine et Marne, and Seine et Oise, to which the reader is referred.

BRIEF (PAPAL) is the name given to the letters which the pope addresses to individuals or religious communities upon matters of discipline. The Latin name is 'brevis,' or 'breve,' which in the intimacy of the lower ages meant an epistle or written scroll. The French in the old times used to say 'brief' for a letter, and the Germans have retained the word 'brief' with the same meaning to this day. The difference between a Brief and a Bull in the language of the Papal Chancery is this: the briefs are less ample and solemn instruments than bulls, and are like private letters addressed to individuals, giving the papal decision upon particular matters, such as dispensations, release from vows, appointments to benefices in the gift of the see of Rome, indulgences, &c.; or they are mere friendly and congratulatory letters to princes and other persons high in office. The apostolical brief is usually written on paper, but sometimes on parchment; it is sealed in red wax with the seal of the Fisherman (*sub annulo Piscatoris*), which is a symbol of St. Peter in a boat casting his net into the sea. (Ciampini, *Dissertatio de Abbreviatorum Munere*, cap. iii.) A bull is a solemn decree of the pope in his capacity of head of the Catholic Church: it relates to matters of doctrine, and as such is addressed to all the members of that church for their general information and guidance. The bulls of excommunication launched by several popes against a king, or a whole state, are often recorded in history. The briefs are not signed by the pope, but by an officer of the Papal Chancery, called 'Segretario dei Brevi: they are indited without any preamble, and, as just observed, are written generally upon paper. The bulls are always on parchment, and sealed with a pendent seal of lead or green wax, representing on one side the heads of St. Peter and St. Paul, and on the reverse the name of the pope, and the year of his pontificate: their name comes from the Latin 'bulla,' a carved ornament or stamp. The bulls of indulgences are general, and addressed to all the members of the church; the briefs of indulgences are addressed to particular individuals, or monastic orders, for their particular benefit.

BRIEF, commonly called **CHURCH BRIEF** or **KING'S LETTER**. This instrument consisted of a kind of open letter in the king's name, and sealed with the privy seal, directed to the archbishops, bishops, clergymen, magistrates, churchwardens, and overseers of the poor throughout England. It recited that the crown thereby licensed the petitioners for the brief to collect money for the charitable purpose therein specified, and required the several persons to whom it was directed to assist in such collection. The origin of this custom is not altogether free from doubt; but as such documents do not appear to have been issued by the crown, previously to the Reformation, they may possibly be derived from the papal briefs, which, from

very early periods of the history of the church, were given as credentials to mendicant friars, who collected money from country to country, and from town to town, for the building of churches and other pious uses. It is probable that, as soon as the authority of the pope ceased in England, these briefs began to be issued in the king's name. They appear to have been always subject to great abuse; and the stat. 4 Anne, c. 14, after reciting that 'many inconveniences arose and frauds were committed in the common method of collecting charity money upon briefs,' enacted a variety of provisions for their future regulation, and, among others, prohibited, by heavy penalties, the practice, which had previously prevailed, of farming briefs, or selling, upon a kind of speculation, the amount of charity money to be collected. Still these provisions were evaded, and heavy abuses arose; and the collection by briefs in modern times was found to be a most inconvenient and expensive mode of raising money for charitable purposes. According to the instance given in 'Burns's Ecclesiastical Law,' tit. Brief, the charges of collecting 61*l.* 12*s.* 9*d.* for repairing a church in Westmoreland, amounted to 330*l.* 16*s.* 6*d.*, leaving therefore only a clear collection of 283*l.* 16*s.* 3*d.* This expensive and objectionable machinery (in the exercise of which the interests of the charity to be promoted were almost overwhelmed in the payment of fees to patent officers, undertakers of briefs and clerks of the briefs, charges of the king's printers, and other contingent expenses) was abolished by the stat. 9 Geo. IV., c. 42, which wholly repealed the statute of Anne, except as to briefs then in course of collection. By the 10th section of the late statute, it is enacted 'That, as often as his Majesty shall be pleased to issue his royal letters to the Archbishops of Canterbury and York respectively, authorizing collectors within their provinces for the purpose of aiding the enlarging, building, rebuilding, or repairing, of churches and chapels in England and Wales, all contributions so collected shall be paid over to the treasurer of the 'Incorporated Society for promoting the enlargement, building, and repairing of churches and chapels,' and be employed in carrying the designs of the society into effect.' This statute does not interfere with the authority of the crown as to granting briefs: its only effect is to abolish the machinery introduced by the statute of Anne. Under the provisions of the stat. 9 Geo. IV., c. 42, a brief was issued and collected, in the year 1834, in aid of the funds of the church building society, and, under the common law authority of the crown, a brief was issued, in 1835, to increase the funds of the 'Society for the propagation of the Gospel in foreign parts,' with a view to the building of schools and chapels for the emancipated Negroes in the West Indies. The brief in the latter case recites that similar letters had been at various times granted, in aid of the Society's funds, by previous kings.

BRIEF (in law) means an abridged relation of the facts of a litigated case, with a reference to the points of law supposed to be applicable to them, drawn up for the instruction of an advocate in conducting proceedings in a court of justice. Briefs vary in their particular qualities according to the nature of the court in which the proceedings are pending, and of the occasion in which the services of an advocate are required; but in general they should contain the names and descriptions of the parties, the nature and precise stage of the suit, the facts of the litigated transaction, the points of law intended to be raised, the pleadings, the proof, and a notice of the anticipated answers to the client's case.

BRIEG, a t. in the government circle of Breslau in Prussian Silesia, and the chief place of a lesser circle of the same name, which forms part of the principality of Brieg, and contains about 236 sq. m. and about 37,000 inh., of whom about 5-6ths are Protestants. The t. itself lies on the Oder, is surrounded by fortifications of no great strength, some of which have been converted into promenades, is well built, with broad, straight streets, has a castle now in ruins, 5 gates, 4 Lutheran and 3 Roman Catholic churches, 3 hospitals, an infirmary, a house of correction (in which 100 prisoners are employed in weaving cottons), a lunatic asylum and other charitable institutions, a gymnasium and an arsenal, and contains about 570 houses, and a pop. of about 3200 souls. The manufactures consist of linens, woollens, woollen gloves and stockings, cottons, lace, leather, &c. It is the seat of a head office for the royal Silesian mines, of a royal salt factory, and of district courts of justice, and has 3 fairs in the year, besides being a large m. t. for cattle, and having considerable trade in timber, which is felled in the neighbouring forests. A long wooden bridge of solid oak

struction crosses the Oder at this place. Brieg is about 465 ft. above the level of the sea, and about 26 m. S.E. of Breslau.

BRIEL, or **BRIELLE**; sometimes also called *the Bril*; a sea-port town on the N. side of the isl. of Voorn in the prov. of S. Holland; is situated near the mouth of the Maas in 51° 54' N. lat., and 4° 8' E. long.

The confederates, having been driven from the Netherlands by the duke of Alba, equipped a fleet in England and entered the harbour of Briel, which surrendered to them, and thus became the earliest seat of the independence of the Dutch republic. This occurred in 1572. In 1585 this town was given up to Elizabeth, queen of England, as security for advances made by her to the States of Holland, and it continued garrisoned by English soldiers until 1616, when it was restored.

The town is well built and strongly fortified. The har. is commodious, and capable of containing 300 vessels. The inh. consisted, in Jan. 1830, of 2000 males and 2195 females; the men are principally occupied as fishermen and pilots.

Briel was the birth-place of the Admirals Van Tromp and De Witt. The town is 6 m. N. of Helvoetsluys, 12 m. W. of Rotterdam, and 24 m. W.N.W. from Dordrecht.

BRIENNE. [BONAPARTE and AUBE.]

BRIENNE, JOHN OF, third son of Erard II., Count of Brienne sur Aulie, a small town in Champagne near Troyes, and of Agnes of Montbelliard, was married by the recommendation of Philippe Auguste, to Mary, daughter of Isabella, wife of Conrad, marquis of Montferrat. Isabella was youngest daughter of Amaury king of Jerusalem, an empty title which Mary thus inherited from her maternal grandfather. Of the early life of John of Brienne nothing is known, but he was named by the king of France as the most worthy champion whom he could offer for the defence of the Holy Land, 'as good in arms, faithful in war, and provident in action.' He was crowned at Tyre, A.D. 1209, and he maintained himself against the Saracens as well as his scanty forces would allow. In the fifth crusade he headed a large band of adventurers in the invasion of Egypt, whom he led to the capture of Damietta, after sixteen months' siege; and when the pride, obstinacy, and avarice of the Cardinal Pelagius, the papal legate, had compromised the safety of the Christian army, which was enclosed on one side by an overpowering host of Moslems, on the other by the waters of the Nile, the king of Jerusalem became one of the hostages for the evacuation of Egypt.

When the emperor Frederic II., stimulated by ambition, undertook to fulfil his often evaded vows of joining the crusade, upon receiving the nominal sovereignty of the Holy Land, John of Brienne, wearied with the ineffectual struggle which he had long supported against the infidels, agreed to abdicate in his favour, and brought his eldest daughter and heiress, Yolande or Iolante, to Italy, where Frederic received her in marriage; yet in the subsequent wars between the pope and the emperor, John commanded the pontifical army against his son-in-law. In the year 1225, the emperor, during his successful expedition to Palestine, entered the Holy City; and, upon a demur of the patriarch, crowned himself with his own hands. From this union of Frederic with Iolante, the present royal house of Naples derives a claim to the title of king of Jerusalem, which it still preserves. (Giannone, xvi. 2; Hallam, *Middle Ages*, i. 264, 4to.)

John of Brienne, in 1222, had married as a second wife Berongaria, sister of Ferdinand king of Castile; but his services in more advanced life were again needed in the east. On the death of Robert of Courtenaye, and the succession of his youngest brother Baldwin II. to the imperial throne of Constantinople, the barons of Romania, seeing that the Latin dynasty required a protector of greater vigour and maturer years than their boy-sovereign, invited John of Brienne to share the throne during his life-time, a proposal which he accepted upon condition that Baldwin should espouse his youngest daughter. In 1229 he accordingly assumed the imperial dignity, and for the ensuing nine years he nobly maintained himself against the increasing power of Vataces, emperor of Nicæa. A contemporary poet affirms that the achievements of John of Brienne (who at that time had passed his 80th year, according to the representation of the Byzantine historian Acropolita) exceeded those of Ajax, Hector, Roland, Uggier, and Judas Maccabeus; and we should readily acquiesce in this assertion, if we were to believe the exploits related of him when Constantinople was besieged by the confederate forces of Vataces and of Asan king of Bulgaria. Their allied army amounted

to 100,000 men; their fleet consisted of 300 ships of war, against which the Latins could oppose only 160 knights and a few sergeants and archers. 'I tremble to relate,' says Gibbon, with well-justified apprehension, 'that instead of defending the city, the hero made a sally at the head of his cavalry, and that of forty-eight squadrons of the enemy no more than three escaped from the edge of his invincible sword.' The ensuing year was distinguished by a second victory; soon after which John of Brienne closed a life of military glory by an act of devotion which raised him equally high in spiritual reputation also. During his last illness, in 1237, he clothed himself in the habit of a Franciscan monk, and thus expired in that which superstition considered to be the richest odour of sanctity.

The reign of John of Brienne is given at length by Du Cange, in the third book of his *Hist. Constantinop.*, and a life of him was published at Paris, in 1727 (12mo), by Laftau, a Jesuit.

BRIENZ, Lake. [BERN.]

BRIES (*Brezno-Bánya*, Hungar., and *Brezno*, Slavon.), a royal free t. in the N.E. part of the co. of Sohl or Zolyom, in Hungary, lies between the Viopar and Csértova ranges, in a valley of considerable elevation, and upon the banks of the Gran. This t. was founded as a centre for mining operations, in the year 1380, when it received its privileges: it was raised to the rank of a royal free town in 1655. There are 18 adjacent vill. within its jurisdiction, which, with the t., contain about 820 houses and 6300 inh., of whom Bries itself contains about 3500. There are excellent grazing grounds in the neighbourhood; and the breeding of sheep and sale of wool are carried on to a great extent. This is also the case with the articles of honey and wax, the produce of which is occasionally much diminished by the havoc which the bears from the adjoining woods commit on the hives. Bries is also celebrated for its cheese, made from sheep's milk. In the neighbourhood are several iron-works and quarries; precious stones, particularly rubies, are found in the beds of the mountain-streams, as well as in the rivulets in the Vale of Michalof. The t. has a piarist college, a Roman Catholic gymnasium, a head-school for elementary instruction, and two churches. 48° 49' N. lat. 19° 40' E. long.

BRIEUC (SAINT), or **BRIEUX (SAINT)**, a city in France, capital of the dep. of Côtes du Nord. It is situated very near the coast of the Manche or channel on the small bay of St. Brieuc, and on the high road from Paris by Rennes to Brest; 278 m. W. from Paris; 48° 30' or 32' N. lat., and 2° 45' W. long.

This city owes its origin to a monastery built in the fifth or sixth century by St. Brieuc, an Irishman, and raised in the ninth century to the rank of a bishopric. It is near the little river Gouet, over which is a handsome granite bridge, and in a bottom surrounded by hills sufficiently high to intercept the view of the sea, although so near. The river Gouet is navigable, and at its mouth is the village of Legué-Saint-Brieuc, which forms the port of the town. Saint Brieuc is a neat town, tolerably well laid out and built, with streets sufficiently wide, and well-looking *places* or squares. It has a cathedral, a Gothic building of the thirteenth century; and before the Revolution there were a collegiate church of St. Guillaume and several parish churches; two monasteries (Cordeliers and Capuchins) and several nunneries. The garden of the Cordeliers is now a public promenade. Of the present commerce of the town we have little trust-worthy information. Among its manufactures may be enumerated linens, serges and other similar woollen stuffs, unbleached thread or yarn, leather, paper, earthenware, and beer. It is engaged also by means of the port of Legué in the French colonial trade, and in the Newfoundland cod fishery, and in ship-building. The pop. in 1832 amounted to 10,420. The town does not appear to have been walled. St. Brieuc is remarkable for its literary establishments. Its public library contains 24,000 volumes. It has a college or high school, a school of hydrography, and an agricultural society. A theatre and a fine hospital are among its establishments; and there are horse-races at the beginning of July every year.—(Malte Brun; Balbi; *Dictionnaire de Bretagne*, by Ogée.)

The bishopric of St. Brieuc includes the dep. of the Côtes du Nord, which has a pop. of 598,872. The bishop is a suffragan of the archbishop of Tours.

The arrond. of St. Brieuc is the most populous in the dep. It had, in 1832, 171,730 inhabitants.

-BRIG, BRIGANTINE. [SHIP.]

BRIGADE. This term is generally applied, in military affairs, to the union of two or more battalions or regiments in one corps; but sometimes to the union of a certain number of men or guns in one subdivision. Thus from two to six battalions of infantry constitute a brigade, and one of cavalry may consist of two or three regiments. The British Rifle brigade is composed of two battalions. A brigade of Sappers consists of 8 men, and is divided into two demi-brigades of 4 men each, one demi-brigade only being employed in the execution of a trench by single sap. Six pieces of ordnance form a brigade of artillery; and the horse artillery consists of 12 troops, to each of which one such brigade of guns is attached. According to Père Daniel, commanders having the charge of several regiments, and the title of brigadiers, were instituted, in France, by Louis XIV. In the British service the commander of each brigade is entitled brigadier-general: his rank is immediately above that of colonel; and, to assist him in the performance of his duties, there is appointed a brigade-major, who is usually a captain, or if a subaltern, he holds in the brigade the rank of junior captain. An effective field-officer of a regiment is not eligible to this post.

To a heavy brigade of artillery there are attached about 140 men and as many horses, and to a light brigade, 100 men and 90 horses. Six-pounder and nine-pounder guns are employed in the field, but the latter kind seems now to be preferred.

During peace the British army is dispersed over the country, several brigades occupying each district. The commanders of regiments make their reports to the brigadier-general; the latter transmits them to the general of the district, and through him they are communicated to the adjutant-general or to the commander-in-chief.

Not only the number of battalions which are united to form a brigade, but also the number of brigades which constitute a division, is various; both brigade and division depending upon the strength of the several regiments and upon the nature of the service. It may be sufficient to mention, that at the battle of Corunna, where the British army consisted of about 25,000 men under arms, the first line was formed of three divisions, the division constituting each wing consisted of three brigades, and the centre division of two; some of the brigades were composed of four battalions, some of two, and one of them of three. The infantry in the second line was, in like manner, unequally divided; the centre consisted of two brigades of cavalry, one formed of three regiments, and the other of two; and there were eleven brigades of artillery.

As the separation of an army into two or more principal divisions permits the greater changes of disposition in the line to be effected with a unity of design which is essential to their utility, so the secondary evolutions are accomplished with a corresponding advantage by the subdivision into brigades. The head of the army, having communicated the general plan of the action to the officers who are immediately under him, reposes on them with confidence for the diligent execution of the orders he may transmit, and is thus relieved from the necessity of following with his own eyes the movements of each particular battalion; while those officers, having the power of distinguishing themselves, either by a faithful adherence to the orders they may receive, or by the exercise of their judgment in modifying such orders according to the varying circumstances of warfare, are thereby prompted to display all their energies in making the necessary dispositions, and subsequently in animating the troops who are to execute them.

BRIGANTES, a tribe of antient Britons who occupied that part of England which includes the counties of York, Lancaster, Cumberland, Westmoreland, and Durham, with the exception of the S.E. corner of Yorkshire between the Humber and the sea as far as Flamborough Head, which was inhabited by the Parisii (Camden's *Britannia*). The Brigantes first occur in Roman history under the reign of Claudius, when, having partially risen against the Romans during the war between the latter and the Iceni, they were defeated by the Prætor M. Ostorius, when some of their leaders were killed and the rest submitted and obtained peace (Tacitus, *Annal.* xii. 32.) During the civil wars of the empire, after Galba's death, the Brigantes revolted against their Queen Cartismandua, who was an ally of the Romans, and who had forsaken her husband Venutius for a lover. Cartismandua escaped with great difficulty and

by the assistance of some Roman cohorts, and Venutius remained master of the country of the Brigantes, and at war with Rome (Tacit. *Hist.* iii. 45). Under Vespasian the Brigantes were totally defeated by the Prætor Petilius Cerialis after a severe struggle, and the Romans took possession of the greater part of their country. Tacitus describes them as the most numerous tribe in the whole province of Britain (Agricola, xvii.) We find the Brigantes mentioned again under the reign of Antoninus Pius, when they made incursions into the neighbouring territory of Genæa (Pausan. viii. 43), which was subject to the Romans, for which they were attacked and defeated by Lollius Urbicus, and part of their territory was taken from them. In the division of Britain made by Severus, the Brigantes were in the province called Britannia Superior, of which Eboracum (York) was the capital, and afterwards in the new division under Constantine they were in the prov. called Maxima Cæsariensis.

We find in Ptolemy a tribe of Brigantes in Southern Hibernia between the rivers *Birgus* (Barrow) and *Dubus* (Blackwater) occupying the space included in the modern counties of Waterford and Tipperary. They are supposed by some to have emigrated from Britain.

The Brigantes must not be confounded with the Brigantia, a tribe in Vindelicia near the borders of the lake of Constance, whom Strabo (iv. p. 206. Casaub.) mentions as terrible robbers, whose name was the dread of the neighbouring countries, and who in their incursions into Italy used to commit the greatest cruelties, killing all the men and male children and even the pregnant women. Whether it was from the traditional character of these Brigantia that the word itself meant in its original language the robbers, or 'free hands,' as some have interpreted it, the name appears to have been held ever after in disrepute, and we find the French in the middle ages using the word Brigans as synonymous with armed adventurers. The English also used to say of a bold lawless fellow, 'he pillaged the Brigana.' (Camden). In the wars of the French revolution and of Napoleon the appellation Brigands became common in the French invading armies to signify all who resisted them without being regular soldiers, and accordingly they did not consider as entitled to any of the courtesies of modern warfare.

BRIGGS (HENRY). Most of the accounts of him are taken from Ward's *Lives of the Gresham Professors*, which we shall also follow as to dates and personal facts. Mr. Ward cites Dr. Smith, *Vita Henrici Briggsii*, and Wood's *Atque Oxonienses*. Briggs was born at Warleywood, near Hales, probably about 1556. He was sent to St. John's College, Cambridge, about 1577, where he became scholar in 1578, B.A. in 1581, M.A. in 1585, fellow in 1588, and reader in natural philosophy, on Dr. Linacer's foundation, in 1590. In 1596, on the establishment of Gresham House, London (not then called College), he was chosen the first reader or professor in geometry. In 1619 he was chosen first Savilian professor of geometry at Oxford, Sir Henry Savile himself having preceded him in the delivery of thirteen lectures. Briggs began where Savile left off, namely at the ninth proposition of the first book of Euclid. He entered himself at Merton college, but he continued to hold the Gresham readership till 1620, when he resigned it, and continued to hold the Savilian professorship till his death, which took place January 26, 1630. He was buried in the chapel of Merton college. It is customary to record of him that he once called astrology a 'mere system of groundless conceits,' which is the only saying of his we can find preserved.

The history of Briggs is that of his connexion with the improvement and construction of logarithms. When Napier, in 1614, first published his invention of natural or hyperbolic logarithms, Briggs was so struck with the invention that he resolved to pay the author a visit in Scotland. He says in a letter to Archbishop Usher, dated March 10, 1615, 'Napier, Lord of Markinston, hath set my head and hands a work with his new and admirable logarithms. I hope to see him this summer, if it please God, for I never saw book which pleased me better, and made me more wonder.' He went into Scotland accordingly, both in 1616 and 1617, and stayed some time with Napier. It must be observed that the first logarithms of Napier are a table of the values of x to every value of θ for all the minutes of the quadrant, in the equation (as it would now be expressed)

$$\left(1 + 1 + \frac{1}{2} + \frac{1}{2 \cdot 3} + \&c.\right)^x = \frac{1}{\sin \theta}$$

How this apparently complicated system is more *natural* than any other is explained in LOGARITHMS. In 1615, Briggs, in his lectures at Gresham college, publicly explained the superior convenience of calculating the following table, on which he wrote to Napier, before his first journey to Scotland:—

$$10^x = \frac{1}{\sin \theta}$$

These are both on the supposition that the *whole sine*, as it was then called, or the sine of a right angle, is 1. Both Briggs and Napier made it such a power of 10 as left no decimals in the table, and therefore of course depending on the number of places in the logarithms contemplated. But Napier himself (according to his own account) had been struck with the convenience of adopting a decimal system, and (according to Briggs' account) mentioned to him that he (Napier) had long thought that the system would be amended by what we should now call the tabulation of x from the equation

$$10^{p+x} = \left(\sin. \theta \text{ to radius } 10^p \right) \text{ or } 10^x = \sin. \theta$$

if the *whole sine* be unity. The difference between the two last systems has nothing to do with the principle of the improvement in question. In the first two systems the logarithms of increasing sines diminish; in the third, the logarithms of increasing sines increase. Briggs, as he informs us, immediately admitted the merit of Napier's improvement. And be it observed, the difficulty *then* lay in making the calculations: probably both Briggs and Napier thought little of the step as an advance in the theory, compared with the merit of actually carrying it into effect. This latter part was done by Briggs, (Napier died in 1618,) who published, in 1618, (having printed them the year before,) his *Chilias Prima Logarithmorum*, containing the first thousand numbers, with logarithms to nine places: and in 1624, his *Arithmetica Logarithmica*, which contains the logarithms of numbers (not of sines) from 1 to 20,000 and from 90,000 to 101,000, all to 15 places, with a method of supplying the logarithms of intermediate numbers. This was fully done by Vlacq, who, in an edition of the work just cited, Goudae, 1628, gave (to eleven places) the logarithms of all numbers from 1 to 100,000, together with a corresponding table of sines, cosines, &c., for every minute of the quadrant. During this time Briggs was labouring at a logarithmic table of sines, &c., of which he did not live to complete the preceding explanations, but which was completed and published by his friend, Henry Gellibrand, (whom he had associated with himself in the task some years before his death,) under the title of *Trigonometria Britannica*, Goudae, 1633. It is to fifteen places of figures, and to every *hundredth* of a degree. Gellibrand states, in the preface, that, about 30 years before his death, Briggs had calculated a canon of sines (natural sines of course) by algebraical equations and differences.

It seems from the preceding that Napier thought himself entitled to the discovery of the decimal method of logarithms, and that, if Briggs's statement be correct, he did not act quite fairly in suppressing the latter name in the preface to his *Rabdologia*. But as this little controversial episode is fully treated of in Dr. Hutton's preface to his *Logarithms*, we shall content ourselves here with citing the passages which constitute the evidence:—

1. Napier, *Rabdologia*, 1616, published after Briggs left him, claims the improvement and entrusts the execution to Briggs as follows: 'Logarithmorum speciem aliam multo præstantiorem *nunc etiam invenimus*, et creandi methodum una cum eorum usu, si Deus longiorem vitæ et valetudinis usuram concesserit, evulgare statuimus. Ipsam autem novi Canonis supputationem ob infirmam corporis nostri valetudinem viris in hoc studii genere versatis relinquimus; imprimis vero D. Henrico Briggs, Londini, publico geometriæ professori, et amico mihi longe charissimo.'

2. Briggs, in the preface of 'Chilias Prima,' &c., written 1618, after Napier's death, hints that in the forthcoming posthumous work of Napier (then announced by his son), justice should be done him, as follows: 'Quod autem hi logarithmi diversi sint ab iis, quos clarissimus inventor, memoriæ semper colendæ, in suo edidit Canone mirifico, sperandum ejus librum posthumum abunde nobis propediem satisfacturum.'

3. Briggs, finding the above hint not attended to, makes the following statement in the preface of the 'Arithmetica

Logarithmica,' 1624: 'Quod logarithmi isti diversi sunt ab iis, quos cl. vir, baro Merohistorion, in suo edidit Canone mirifico, non est quod mireris. Ego enim, cum meis auditoribus Londini publico in collegio Greshamensi, horum doctrinam explicarem, animadverti multo futurum commodius, si logarithmus sinus totius servaretur 0, ut in Canone mirifico; logarithmus autem partis decimæ ejusdem sinus totius, nempe sinus 5 gr. 44 m. 21 s. esset 10,000,000,000. Atque ea de re scripsi statim ad eum autorem, et quam primum per anni tempus, et vacationem à publico docendi munere licuit, profectus sum Edinburgum, ubi humanissime ab eo acceptus hæsi per integrum mensem. Cum autem inter nos de horum mutatione sermo haberetur, ille se idem dudum sensitisse et cupivisse dicebat; veruntamen istos, quos jam paraverat, edendos curasse, donec alios, si per negotia et valetudinem liceret, magis commodos perfecisset. Istam autem mutationem ita faciendum censebat, ut 0 esset logarithmus unitatis, et 10,000,000,000 sinus totius, quod ego longe commodissimum esse, non potui non agnoscerè.'

The algebra of Vieta does not appear in the writings of Briggs, not even in the preface to the 'Trig. Brit.,' which must have been written many years after Vieta's death. For his first view of the coefficients of the BINOMIAL THEOREM, see that article. Briggs made considerable use of interpolation by differences, but his symbols and methods in general are like those of Stevinus. It must, however, be observed that the history of the introduction of Vieta's algebra into England is so scanty, and the little there is of it so confused, that it would be premature to attempt any comparison of Briggs's methods with his means. It is evident from the first page of the first book of the 'Trig. Brit.,' that Briggs was acquainted with one of Vieta's writings (the 'Rel. Veræ Cal. Gregor.),' and from the rest that he had some of his methods; but it seems to us that there is throughout the whole a general suppression of his notation, and even of his name; particularly in the following sentence, which will surprise those who know what Vieta did: 'Modus inveniendi subtensas ab antiquis usitatus traditur à Ptolemæo, Regiomontano, Copernico Rhetico, et aliis; et ante hos ab Hipparcho et Menelao; sed *ista ætas* alium modum invenit magis compendiarium, et non minus certum.' While speaking of the introduction of the *specious* algebra, we should like to draw attention to the following question—What is the book described in the 'Cat. Biblioth. Reg. Neapolitani Musæi' as 'Vietaus Fr. Opera Math. Londini, 1589?'

(See Hutton's *Preface*, above cited; Maseres's *Scrip. Log.* vol. vi.; *Montucla*, &c.)

BRIGHTHELMSTONE, commonly written and pronounced BRIGHTON, a parliamentary bor., m. t., seaport, and fashionable watering-place in the hund. of Whalesbone, rape of Lewes, Sussex, 46 m. S. of London, direct distance. It is chiefly in the par. of Brighton, of which it occupies the whole breadth from E. to W., and extends also W. into the adjoining par. of Hove. The barracks and a few detached houses are in the parish of Preston, which lies on the N. of both BRIGHTHELMSTONE and Hove. It is bounded on the E. by the parishes of Rottingdean, Ovingdean, and Falmer, none of which contain any houses connected with Brighton. The town occupies only a part of the par. of Brighton, but it comprises nearly the whole of the population. The government is vested in a chief constable and headboroughs, to whom are added commissioners appointed under act of parliament for regulating, paving, improving, and managing the town. It was constituted a parliamentary bor. by the Reform Act, and returns two members; the bor. consists of the parishes of Brighton and Hove. The pop. within the boundary in 1831 was 41,994.

Brighton stands near the centre of the curved line of coast of which the E. and W. points are respectively Beachy Head and Selsea Bill. The town is built on a slope, and is defended from the N. winds by the high land of the South Downs, which from Beachy Head as far as the central part of Brighton press close on the sea and form high chalk cliffs. From the central part of Brighton W. the hills recede farther from the sea, leaving a level coast. Thus the town of Brighton in the E. part presents a high cliff to the sea, and in the W. part a sloping low beach. The soil on the South Downs is a calcareous earth resting on chalk: on the steep slopes and some of the flat tops the soil is very thin; in the hollows and occasionally on other parts it is a pretty good loam, capable of producing profitable

crops. From the nature of the ground and the superior advantage of a sea-frontage, the town has not increased towards the N. so much as along the coast; but it has run up the depressions in the chalk, along which the London and Lewes roads respectively are formed. The entire sea frontage of the par. of Brighton, a space of near 3 m. in length, is occupied with houses, and the line is extending W. into the par. of Hove. The pop. of the town has increased with astonishing rapidity during the present century: in 1801 it was 7339; in 1811, 12,012; in 1821, 24,429; in 1831, 40,634. At present the number of residents during the summer occasionally amounts to 70,000. The number of houses within the town in 1831, taxed at 10*l.* and upwards, was 2763; the entire number within the parliamentary boundary was 8885. The amount of assessed taxes in 1830 in the par. of Brighton was 31,800*l.*, and within the boundary 35,580*l.* The place is rapidly and daily increasing.

The origin of Brighton is uncertain. Its name is commonly derived from a Saxon bishop supposed to have resided here, named Brighthelm; but this is mere conjecture. Roman coins have been dug up in the vicinity. At the Conquest the lordship of the manor was included in the possessions of Harold, and was given by the Conqueror to his son-in-law, William de Warren. About this time a colony of Flemings are supposed to have established themselves for the purpose of fishing. From the exposed nature of the coast the town has occasionally suffered from hostile invasion. It was plundered and burned by the French in 1613. During the reigns of Henry VIII. and Elizabeth fortifications were erected to protect it. The town has also suffered from storms and the encroachments of the sea, by which the cliffs have been undermined, and at different times many houses destroyed. Wooden groins have lately been formed, running from the cliff to low water mark, within which the loose shingle is deposited; the shingle in this part of the channel is always driven eastward. A sea wall is also partly built and still in progress along the E. cliff. During part of the 17th century Brighton is stated to have contained upwards of 600 families, chiefly engaged in fishing. It was from Brighton that Charles II. effected his escape to France after the battle of Worcester, being conveyed across the channel by the captain of a coal brig, who afterwards enjoyed a pension for his services.

About the middle of the 18th century attention was directed to Brighton as a suitable watering-place, and chiefly by Dr. Richard Russell, an intelligent medical man, whose work on the use of sea water created considerable interest. But the progress of the place was slow until it was rendered a fashionable resort by Geo. IV., then prince of Wales, who selected it as his summer residence. In 1784 the foundation of the Marine Pavilion was laid. This royal palace may be regarded as the nucleus of modern Brighton. It is a singular structure. The original design has received many alterations and additions. The appearance of the exterior is rather fantastic than striking, presenting an assemblage of domes, minarets, and pinnacles. The furniture of the interior is of a very expensive character. The pleasure grounds attached occupy upwards of seven acres. Adjoining the palace is the fashionable promenade of Brighton termed the Steine, which, prior to 1793, was a piece of common land used by the inh. for repairing and drying their boats, nets, &c. It is now a spacious lawn, surrounded by fine houses. On the N. side of it is a bronze statue by Chantrey of George IV.

The rapid increase of Brighton caused the want of a suitable landing-place to be strongly felt. A company was accordingly formed for the erection of a suspension or chain pier, which was begun in October, 1822, under the direction of Captain Brown, and opened in November of the following year. It is composed of four spans or chain bridges, each 255 ft. in length, and at the end, on a framework of strong oaken piles, is a platform paved with blocks of granite. The main chains, which are eight in number, are carried over pyramidal cast-iron towers 25 ft. high, which rest on clusters of piles. The entire length of the pier is 1136 ft., the breadth of the platform being 13 ft. This structure, which stood several severe storms uninjured, was seriously damaged in a tremendous gale on the night of the 15th October, 1833, by which the third bridge or span was broken down, the suspension rods and chains being snapped and dislocated. It has been since repaired.

On the E. side of the par. of Brighton is Kemp Town,

a magnificent assemblage of private houses erected on the estate of Mr. Kemp. When first built, a few years ago, it was quite detached from the town, but is now united with it. On the W. side, in the par. of Hove, is Brunswick square, one of the best parts of Brighton; beyond this a crescent named Adelaide-crescent is in the course of building. Indeed the best part of Brighton may be briefly described as composed of ranges of splendid houses, formed into squares and crescents. The parish church of St. Nicholas, an ancient edifice, stands on a hill N.W. of the town; the living is a vic., in the archdeaconry of Lewes, and diocese of Winchester; the rec. of West Blatchington, a par. N.W. of Brighton, is annexed to it. The town-hall, begun in 1530, on the site of the old market, nearly in the centre of the town, is a large but ill-designed edifice. The places of worship belonging to the Establishment and to the Dissenters are numerous. The royal chapel stands on the site of the former assembly rooms or rather the building has been converted to its present use; its internal decorations are very fine, particularly the seats appropriated to the royal family. St. Peter's Church, erected in 1827, is a handsome Gothic structure, of Purbeck stone, situated near the entrance of the town by the London road. There are several chapels of ease subordinate to the parish church. Some of the dissenting chapels are handsome edifices.

The charities consist principally of the poor-house, a well-regulated establishment on the top of Church Hill; the Dispensary and County Infirmary, founded in 1809, under the patronage of George IV.; the Sussex County Hospital, near Kemp Town, founded by the earl of Egremont and T. R. Kemp, Esq.; the United Fishermen's Society, for the relief of the fishermen of Brighton; with several other institutions of a benevolent character. Of charity schools there are two national schools which are partly endowed; the Union charity schools, founded by Edward Goff, Esq., in 1805, who left 400*l.* to the boys' school, and 200*l.* to the girls', are supported by voluntary contributions; and there is a school founded by Swan Downer, Esq. in which fifty girls are educated and clothed. The education returns of 1815 give 158 daily schools, 43 boarding-schools, 14 Sunday schools, and three infant schools. The number of private schools at Brighton is very considerable, a circumstance owing to the salubrity of the place, and the desire of many parents who live in London to send their children out of the metropolis.

The inns, hotels, and baths of Brighton are numerous. There is a chalybeate spring in the par. of Hove, which has been inclosed, and has considerable celebrity. The water has been analysed by Professor Daniel, and is held in high estimation for its medicinal qualities. An establishment, termed the German Spa, was formed in 1825 for the manufacture of artificial mineral waters. Brighton contains several places of amusement; a theatre, an assembly room, a club house, and about a mile E. of the town, on the summit of a beautiful part of the Downs, a fine race-course, at which races take place annually either in July or August.

The trade of Brighton is confined exclusively to the supply of the wants of a rich population. There is an annual fair on September 4th; the principal market days are Tuesdays, Thursdays, and Saturdays. At the market, which is excellent and convenient, all kinds of fruit, vegetables, meat, and fish are sold. The market was originally a weekly one, held under charter; in 1773 an act was obtained for a daily market. A fish market is also held by the fishermen on the open beach.

There is no vestige of the fortifications erected in the 16th century. The present battery was originally erected in 1793, and rebuilt in 1830.

The gas with which Brighton is lighted is supplied by two gasometers; one to the E. of Kemp Town, the other to the W. of Brunswick Town, near Hove Church.

About 5 m. from Brighton, by a pleasant road across the Downs, is the Devil's Dyke, an extensive entrenchment, about a mile in circumference, of an oval form, which is conjectured, from the finding of an urn filled with coins of the later Roman emperors, to have been a Roman encampment. It is separated from one part of the Downs by a natural chasm, which appears to have been made deeper in order to form a high rampart called Poor Man's Wall. From this height there is a fine view of the Weald of Sussex, and some of the adjoining parts of Hampshire, Surrey, and Kent. The ground around Brighton affords a number of fine drives and walks.

Since the establishment of steam-boats and the erection

of the chain-pier, Brighton has become a packet station, which is much used by those who prefer going and returning from Paris by way of Dieppe and Rouen, instead of the old route of Dover and Calais. Four different lines of railroad have been projected, and are now (March, 1836) before the public. (*See Lewes and Brixthelmstone*; Dr. Relhan's *Nat. Hist. of Brighton*; *Boundary Reports*.)

BRIGNOLLES or **BRIGNOLES**, a town in France, capital of an arrond. in the dep. of Var. It is on the riv. Calami or Calania, whose waters flow ultimately into the Argens; and on the road from Paris to Draguignan, 513 m. S.S.E. of Paris, 43° 24' N. lat. and 6° 4' E. long.

The town is delightfully situated in a hollow, surrounded by wood-crowned heights. The salubrity of the air was in such esteem formerly, that the countesses of Provence were accustomed to resort hither for the purpose of lying-in, and had their young children brought up here. The trade of the place, in the early part of the present century, was considerable: it was especially famous for the manufacture of leather. The *Dictionnaire Universel de la France* (1804) gives the number of tan-yards at forty-two, and adds, that there were seven soap manufactories, seven brandy distilleries, besides manufactories of silk goods, woollen cloths, wax, hats, glue, starch, candles, earthenware, and liqueurs. But the trade of the town has probably been much reduced, for there has been a remarkable diminution of the population. In the work just cited it is given at 9060: in 1832 it was only 5432 for the town, or 5940 for the whole commune.

The country around Brignolles is exceedingly fertile: the vine and the olive are cultivated on the surrounding hills; and the fruits, especially the dried plums, are in high estimation. The arrond. of Brignolles had in 1832 a pop. of 71,062.

BRIMSTONE. [SULPHUR.]

BRINDISI, the Roman Brundisium, and Greek Brentesium (*Βρεστίσιον*), a town in the prov. of Terra d'Otranto in the kingdom of Naples, in 40° 38' N. lat., and 18° E. long., well known in Roman history for its capacious and safe har., which was the chief port of embarkation from Italy to Greece. The origin of Brundisium is lost in the obscurity of the ante-Roman times. Tradition spoke of a Cretan colony having early settled here. It was one of the chief towns of the Messapian pen., and of that part of it called Calabria by several ancient geographers. The name of Brundisium or Brundisium is said by Strabo (p. 282) and others to be derived from a word, which in the old Messapian language signified a stag's head, a shape somewhat resembling that of its double har., the inner part of which forms two horns which half encircle the town. The Brundisians and the other Messapians were often at variance with the Greek colony of Tarentum, before the Romans extended their conquests into Apulia. After the war of Pyrrhus and the subjugation of Tarentum, the Romans, under the consuls M. Atilius Regulus and Lucius Junius Libo, turned their arms against the other towns of Messapia and seized Brundisium among the rest, about 267 B.C. Brundisium was made a Roman colony. The Via Appia terminated at Brundisium. [ANTONINUS, ITINERARY.] The poet Pacuvius was a native of this town, and Virgil died here. Pompey, having left Rome at the beginning of the civil war, repaired to Brundisium, where he was besieged by Cæsar, who endeavoured to prevent his escape by blocking up the inner har. by means of two piers which he raised, one on each side of the entrance. Before however he could accomplish his object Pompey embarked his troops in secrecy and sailed away for Greece. To these two piers raised by Cæsar the beginning of the deterioration of the inner port has been attributed. The passage having become very narrow, the sands carried by the sea accumulated and formed a bar across which gradually choked up the entrance, and an isthmus was created separating the inner from the outer har. or roadstead. This however was the slow work of centuries. The calamities which befell Brindisi after the fall of the Roman empire, when it was taken and retaken by the northern barbarians, the Greeks and the Saracens, contributed to the deterioration of the har. by preventing the inh. from attending to its repair. Frederick II. built a castle for the defence of the town. Under the Angevins the inner har. was already become a stagnant pool separated from the sea. Other marshes formed themselves in the neighbourhood, and the air of the town became seriously affected. Attempts were made by the Aragonese kings to re-open the communication between

the two harbours, but they failed. In the 18th century the pop. of Brindisi was reduced to less than 3000, and was threatened with total destruction by the pestilential state of the atmosphere, when King Ferdinand IV. in 1775 ordered the communication with the inner har. to be restored. A cut was made across the isthmus, and the sea water being thus let in, and the other marshes at the same time partially dried up, the air of Brindisi evidently improved. (Pignonati, *Memoria del riapimento del porto di Brindisi* 1781.) The depth of the channel however is not more than about 8 ft., and the vessels are obliged to remain in the roads, in which there is good anchorage partly protected by an isl. having a castle upon it called Forte di Mare. New works have been lately (1830) undertaken to keep the channel of communication clear and to cleanse the inner har. of the mass of sea weeds which accumulate very fast, and by their decay corrupt the atmosphere. (Afan di Rivera, *Considerazioni sulle dua Sicilie*.)



[Coin of Brundisium. Copper. Brit. Mus.]

The present town of Brindisi occupies but a small part of the site of the ancient city. It is surrounded on the land side by walls and ditches, and has a castle called Forte di Terra, commanding the northern arm of the inner harbour. Outside the town and not far from the castle is a fountain said to be of Roman construction, with a niche on each side, from which flow two rills of very good water, probably the fountain mentioned by Pliny from which the ships were supplied. The water in the town is brackish. The town is ill built and looks miserable, and the air is still unwholesome in summer. The pop., which is 6000, carries on some trade by sea; part of the oil of Puglia is shipped off at Brindisi. The principal object of antiquity is a pillar about 50 ft. high, which forms a conspicuous object. Another, which stood near it, has been removed to Lecce, and the pedestal alone remains. The cathedral is a large but not handsome building of the Norman times, with a mosaic pavement. Brindisi is an archbishop's see. It lies about 200 m. E. by S. of Naples, 40 m. N.E. of Taranto, 40 N. of Gallipoli, and 20 N.N.W. of Lecce.

BRINDLEY, JAMES, was born in 1716, at Thornsett, a few miles from Chapel-en-le-Frith, in the county of Derby. The great incident of his life was his introduction to the duke of Bridgewater, and the application of his talents to the promotion of artificial navigation. [BRIDGEWATER.] But he had previously acquired reputation by his improvements in machinery; and at an early age, although deprived of the advantages of even a common education, he evinced a mind fruitful in resources far above the common order. Brindley followed the usual labours of agriculture until about his seventeenth year, when he was apprenticed to a millwright named Bennet, residing near Macclesfield. This individual being generally occupied in distant parts of the country, young Brindley was left at home with few or only indefinite directions as to the proper manner of executing the work which had been put into his hands. This circumstance, however, was well calculated to call forth the peculiar qualities of his mind; his inventive faculties were brought into exercise, and he frequently astonished his employer by the ingenious improvements which he effected. Mr. Bennet, on one occasion, was engaged in preparing machinery of a new kind for a paper-mill, and although he had inspected a mill in which similar machinery was in operation, it was reported that he would be unable to execute his contract. Brindley was informed of this rumour, and as soon as he had finished his week's work, he set out for the mill, took a complete survey of the machinery, and, after a walk of fifty miles, reached home in time to commence work on Monday morning. He had marked the points in which Mr. Bennet's work was defective, and by enabling him to correct them, Bennet's engagement was satisfactorily fulfilled.

When the period of his apprenticeship had expired, Brindley engaged in business on his own account, but he

did not confine himself to the making of mill machinery. In 1752 he contrived an improved engine for draining some coal-pits at Clifton, Lancashire, which was set in motion by a wheel 30 feet below the surface, and the water for turning it was supplied from the Irwell by a subterraneous tunnel 600 yards long. His reputation as a man of skill and ingenuity steadily increased. In 1755 a gentleman of London engaged him to execute a portion of the machinery for a silk-mill at Congleton. The construction of the more complex parts was intrusted to another individual, who, though eventually found incapable of performing his portion of the work, treated Brindley as a common mechanic, and refused to show him his general designs, until it became necessary to take Brindley's advice. Brindley offered to complete the whole of the machinery in his own way; and as his integrity and talents had already won the confidence of the proprietors, he was allowed to do so. The ability with which he accomplished his undertaking raised his reputation still higher. In 1756 he erected a steam-engine at Newcastle-under-Lyne, which was calculated to effect a saving of one half in fuel.

Shortly after this time, Brindley was consulted by the duke of Bridgewater on the practicability of constructing a canal from Worsley to Manchester. Brindley's success in this undertaking was the means of fully awakening public attention to the advantages of canals. Had a man of less ability undertaken the work, it is not improbable that it might have turned out a failure, and the improvement of our inland navigation might have been deferred some years longer. The duke of Bridgewater's canal was referred to at the time by the projectors of similar undertakings, just as the Liverpool and Manchester railway is at the present day in the prospectus of a new railroad. Within forty-two years after the duke's canal was opened, application had been made to Parliament for 165 Acts for cutting canals in Great Britain, at an expense of above 13,000,000*l.* All the ingenuity and resources which Brindley possessed were required in accomplishing the duke of Bridgewater's noble scheme; and it may be fairly said that where there were most difficulties in the way, there Brindley's genius was displayed with the greatest effect. But it was not only in his expedients for overcoming difficulties that his talents were displayed; he made use of many new and ingenious contrivances for conducting the work with the utmost economy.

In 1766 the Trent and Mersey Canal was commenced under Brindley's superintendence. It is 93 m. long, and unites the navigation of the Mersey with that of the Trent and the Humber. It was called by Brindley the 'Grand Trunk Navigation,' owing to the probability, from its great commercial importance, of many other canals being made to join it. The Grand Trunk Navigation, by means of a tunnel 2880 yards in length, passes through a hill at Harecastle, in Staffordshire, which had previously been considered an insurmountable obstacle to the completion of a can.: this tunnel is 70 yards below the surface. The can. was not completed at Brindley's death; but his brother-in-law, Mr. Henshall, successfully finished it. Brindley next designed a can. 46 m. in length, called the Staffordshire and Worcestershire Canal, for the purpose of connecting the Grand Trunk with the Severn. He also planned the Coventry Canal, but owing to some dispute he did not superintend its execution. He however superintended the execution of the Oxford Canal, which connects the Thames with the Grand Trunk through the Coventry Canal.

These undertakings opened an internal water communication between the Thames, the Humber, the Severn, and the Mersey, and united the great ports of London, Liverpool, Bristol, and Hull, by cans. which passed through the richest and most industrious districts of England.

The can. from the Trent at Stockwith to Chesterfield, 46 m. long, was Brindley's last public undertaking. He also surveyed and gave his opinion on many other lines for navigable cans. besides those mentioned; among others, on a can. from Liverpool to Runcorn, where the Duke of Bridgewater's Canal locks into the Mersey. He proposed carrying this can. over that river at a point where the tidal water rises to the height of 14 ft. He formed also a scheme for uniting Great Britain and Ireland by a floating road and can. from Port Patrick to Donaghadee; and like most other impracticable schemes of ingenious men, it became a favourite speculation. Phillips, in his 'History of Inland Navigation,' says that Brindley pointed out the method of

building walls against the sea without mortar; that he invented a mode of cleansing dock-yards, and for drawing water out of mines by a losing and gaining bucket. Phillips states that he had been in the 'employ of the great Brindley.'

Brindley's designs were the resources of his own mind alone. When he was beset with any difficulty he secluded himself, and worked out unaided the means of accomplishing his schemes. Sometimes he lay in bed two or three days; but when he arose he proceeded at once to carry his plans into effect, without the help of drawings or models. A man like Brindley, who was so entirely absorbed in his own schemes, was not likely to partake much of the pleasures of society. A hectic fever, which had hung about him for several years, at length terminated his laborious and useful life. He died at Turnhurst, in Staffordshire, September 27th, 1772, aged 56, and was buried at New Chapel in the same county.

The principal events in Brindley's life were first communicated to the public from materials furnished by Mr. Henshall, his brother-in-law, and other friends, who spoke highly of 'the integrity of his character, his devotion to the public interests, and the vast compass of his understanding, which seemed to have an affinity for all great objects, and likewise for many noble and beneficent designs which the multiplicity of his engagements and the shortness of his life prevented him from bringing to maturity.' No man was so entirely free from jealous feelings. A letter, written while the Grand Trunk Navigation was proceeding, thus describes Brindley's personal appearance:—'He is as plain a looking man as one of the boors of the Peak, or one of his own carters; but when he speaks all ears listen, and every mind is filled with wonder at the things he pronounces to be practicable.' The reply which Brindley is said to have given to a committee of the House of Commons, when asked for what object rivers were created, viz. 'To feed navigable canals,' is characteristic, and very probably authentic; but it was made public by an anonymous writer in the 'Morning Post,' whose communications respecting Brindley were stated by some of his friends to contain many inaccuracies.

(Phillips's *History of Inland Navigation*; Priestley's *Canals of Great Britain*; *Communications to the Brit. Brit.*)

BRINE SHRIMP, or BRINE WORM. [BRANCHIOPODA.]

BRONIC ISLES. These three isls. lie on the N.E. coast of the Adriatic, near the port of Tassano, and N. of Pola, in the Austrian circle of Trieste. They contain the quarries from which the Venetians obtained the ash-grey coloured and highly durable marble of which their palaces are constructed. The largest of the isls. is called Brono; the names of the other two are Coseda and San Girolamo. 45° 3' N. lat. 13° 53' E. long.

BRIOUDE, a town in France, capital of an arrond. in the dep. of Haute Loire (Upper Loire), on the road from Paris to Le Puy, 271 m. S. by E. of Paris; in 45° 17' N. lat. and 3° 24' E. long.

This town is situated near the left bank of the Allier, and derives its name from an old Celtic word *briva*, a bridge, or ford (compare Samaro-briva). This name however appears to have belonged originally to Old Brioude, which is close upon the Allier, while the modern town is a little removed from the bank. At Old Brioude is a magnificent bridge of one arch, of about 180 ft. span, supposed to have been built by the Romans. There is at Brioude a handsome church, once much venerated as containing the relics of St. Julian, an early martyr, who was put to death here or at Old Brioude. There were also before the Revolution several religious houses. There are some woollen stuffs manufactured in this town; and in the neighbourhood marble is quarried and coal dug. The pop. in 1832 was 5052 for the town, and 5099 for the whole commune.

Brioude suffered much in the middle ages from the ravages of war. It was laid waste in the fifth century by the Burgundians, in the sixth by Thierry, king of Metz, and in the ninth by the Saracens, and afterwards successively by the nobles of Auvergne, by the English, and in the civil wars of the sixteenth century by the Huguenots.

The arrond. of Brioude had, in 1832, a pop. of 80,592.

BRISGAU, THE, or BREISGAU, in the S.W. part of Swabia, is bounded on the N. by the Ortenau, on the E. by the Black Forest, on the S. by Switzerland, and on the

W. by the Rhine, and is now included in the circle of the Upper Rhine, in the Grand Duchy of Baden. It was originally a landgraviate belonging to the dukes of Zähringen; it then passed into the possession of the dukes of Hohenberg, and in 1367 was sold to the house of Habsburg. Rudolph of Austria, the founder of the reigning dynasty of Austria, was born in the castle of Landau, in this territory. It comprised an area of about 1250 sq. m., and contained about 135,000 inhabitants, inclusive of a district called the Brisgau, which had a pop. of about 16,000. The Brisgau is traversed by numerous mountains, with the exception of the districts adjacent to the Rhine, where the surface is level and the soil highly productive: here large quantities of grain, flax, hemp, fruit, vegetables, wine, &c., are raised. In the other parts flax and herbs are raised to a considerable amount, much timber is cut, and the metals, particularly iron, copper, and lead, are worked. The soil of the forest-districts are considered for the manufacture of wooden clocks and other articles of wood. The revenue which the Brisgau yielded amounted to about 38,000*l.* per annum. By the treaty of Lunzville, in 1691, Austria ceded a small portion of this possession (the Frenkthal, on the left bank of the Rhine) to France, which afterwards relinquished it to Switzerland; and also gave up the remainder to the Duke of Modena as a compensation for the loss of his territory in Italy. Upon his death, in 1685, it devolved to his son-in-law, the Archduke Ferdinand of Austria, as Duke of the Brisgau; but in 1805, by virtue of the peace of Presburg, it became the property of the then Elector of Baden, with the exception of a small tract assigned to Württemberg, which Baden subsequently acquired. It contained seven-tenths towns, including Freiburg the capital, Old Hirsau, Waldkirch, Kenzingen, Endingen, Stauffen, and St. Blasien; and 450 villages and hamlets.

BRISSEON, HARNARRÉ, was born at Fontenay-le-Comain in the prov. of Poitou, of a family, several members of which had distinguished themselves at the French bar. Brisson applied to the same profession, in which he attained the highest honors. He was made King's advocate in 1774, afterwards councillor of state, and lastly president à mortier in 1803. King Henry III. used to say that no other king could boast of having in his service so learned a man as Brisson. He sent him on several missions, among others to Queen Elizabeth of England; and he commissioned him to collect and edit the ordinances of his predecessors and his own, which appeared under the following title—*Code de Henry III. Roy de France et de Pologne, rédigé en ordre par Messire Harnarré Brisson*, fol. 1767, afterwards republicated with additions under Henry IV., by La Caron, 1709, and variously called *Code Henri*. Brisson was well versed in the ancient writers, and several valuable works were the result of his studies. 1. 'De verborum quædam præsertim significatibus,' a useful glossary of words and sentences of the Roman law. This work went through several editions; the one by J. C. Itier, fol. Frankfurt, 1833, contains many additions. 2. 'De formula et admodum Papæ Romæ verborum,' 16, 4to., fol. 1583, a work of more general use to students. The author explains the proper meaning and application of certain established forms of words which had a fixed meaning, and were used by the Romans in their public acts, in their religious ceremonies, in the senate, in the tribunals, in the forum, in their contracts, testaments, &c. An improved edition of this work was published by F. C. Carrol, fol. Leipzig, 1781, with a life of Brisson prefixed to it. 3. 'De rebus Persarum principum,' 8v. m., in which he treats of the ancient Persian monarchy, its political institutions, its laws, the religion and habits of the people, and their military establishment. An edition with notes and corrections was published by Professor Loderlin, Strasburg, 1716. Several other works of Brisson, chiefly connected with the Roman laws and institutions, are found in his 'Opera Varia,' Paris, 1697, republished at Leyden, 1746, with the title of 'Opera Minora,' which contain 'Secretarum et iure civilis verborum,' 4to. iv.; 'De iura iustorum,' 4to. viii.; 'De iure matrimonii,' 4to. lvi.; 'Ad legem Juliam de adulteris,' 4to. lxxviii.; 'De somnibus et insomniis,' 4to. lxxviii.; 'Ad legem Domitiam de spectaculis in Codice Theodosio,' 4to. lxxxviii.; 'Parriciorum liber singularis,' all works of considerable utility.

The end of Brisson's life was remarkably unfortunate. When Henry III. was obliged to leave Paris on account of the factions of the League in January, 1588, Brisson stayed behind, in the hope, as it would appear, of bringing about a reconciliation between the king and the people of the

capital. After the murder of the Guises, the leagueers being now in open revolt against the king, arrested, Jan. 1588, the President de Harlay, and put Brisson in his place as first president of the parliament, which he accepted, as he said to his friends, in order to save his life and that of his wife, as the same was protesting previously before two verses against any intention on his part of violating the King's prerogative. Henry III. having by an edict of February, 1588, transferred the parliament to Tours, Brisson did not obey the summons, but remained in the capital. After Henry's death in August of the same year, Brisson proclaimed the duke of Mayenne, the chief of the League, lieutenant-general of the kingdom. But he refused the intrigues of Mendoza, the Spanish ambassador, who wanted to obtain the regency for his master, as well as the propositions of Cardinal Gontaut, the pope's legate, who on presenting to the parliament his list of propositions wanted to take the oath reserved to the king. However Brisson soon after became suspected by the faction of the League who ruled in Paris, and who thought that he was favorable to Henry IV. Availing themselves of the absence of the duke of Mayenne, they arrested Brisson, with two other councillors, on 15th Nov. 1591, at 5 o'clock, and hanged them at 11 o'clock the same morning. The Duke de Mayenne on his return to Paris hanged four of the most violent of the faction of the League. (De Thou, *and Discours sur la mort du President Brisson*, par Denys du Vignay, sa court., Paris, 1595.)

BRISSON, MATHUREN JACQUES, whose zoological and philosophical works have rendered his name deservedly celebrated, was born at Fontenay-le-Comain on the 29th of April in the year 1723. Educated, as he may be said to have been, under Rousseau (for his youth was passed in aiding the labours of that celebrated observer of nature, and in superintending his cabinet), he imbibed, at an early age, a love for natural science, which only left him with his life. His progress must have been rapid; for we find him selected as the tutor in physics and natural history to the 'children of France,' and filling the office of 'Censeur Royal.' He became a member of the Academy of Sciences, and afterwards of the Institute, and succeeded the Abbé Nollet in the physical chair at the college of Navarre. A warm defender of the Abbé, whose theory of electricity he supported with all the weapons which his intimate knowledge of the subject afforded him, he attacked Franklin, and endeavored to pull down Priestley; but he, notwithstanding, fairly stated in his class, in his capacity of professor, the new theory which had taken the place of that of the Abbé, explaining and discussing the facts on which it rested.

The government charged him with the care of providing lightning-conductors for the protection of many public buildings, and appointed him to examine those which other projectors might bring forward.

Death overtook him at Broisai, near Versailles, on the 22d June, in the year 1806, at the age of eighty-three; but for some months before he died he was a miserably example of the body surviving the intellect. An apoplectic attack had defaced all his ideas, depriving him of the knowledge which he had so laboriously acquired, and even blotting out from his memory the French language. It is a painful but striking proof of the endurance of those earliest impressions which are stamped upon the infant mind, that his only recollections in this distressing state consisted of a few words of the provincial idiom which he had heard from his nurse and mixed with his first accents.

His works are numerous; among the most important are his ornithology, and his treatise on the specific gravity of bodies. The first appeared at Paris in 1769, in 6 vols. 4to., in Latin and French. The second, under the title of 'Pesanteur Spécifique des Corps,' was published in quarto in 1787.

BRISSEOT, JACQUES PIERRE, was born on the 14th of January, 1754, in the village of Ocuville, near Chartres. His father, though only a poor pastry-cook, endeavored to give all his children a good education. It was his intention that Jacques Pierre, who as a boy gave signs of great talents, should be brought up to the bar, but the youth's early passion for literature defeated this project. Brisson was particularly fond of the study of languages, and made himself a perfect master of English; he eagerly devoured the best authors, turning his attention more especially to

the historians, economists, and political writers. On attaining the age of manhood he quitted the study of law and went to Boulogne, where he was intrusted with the editorship of the 'Courier de l'Europe.' This liberal journal was soon arbitrarily suppressed by the French government, and Brissot was thrown upon the world with no other resources than his acquirements and abilities.

In 1780 he published his 'Theory of Criminal Laws;' and the next year two eloquent discourses on the same subject gained him the prizes in the Academy of Châlons-sur-Marne. Between the years 1782 and 1786 he put forth ten volumes of 'The Philosophical Library' on criminal laws. At the same time he studied the natural sciences, and devoted part of his time to metaphysical pursuits, in which latter department he published an essay, entitled 'On Truth, or Meditations on the Means of reaching Truth in all branches of Human Knowledge.' During part of this time he resided in England, and it was in London, somewhere about the year 1783, that he undertook a periodical work, called 'Universal Correspondence on all that concerns the Happiness of Men and Society.' The laudable object of this work was to disseminate in France all such political principles as were based on reason. The constitutional laws and usages of England formed a leading topic. The French government seized and suppressed the book. His next works were 'A Picture of the Sciences and Arts of England,' and another on British India.

Returning to France, the ministry of the day arrested him and threw him into the Bastille. His imprisonment was not of long duration, but in obtaining his liberty he was compelled to give up an Anglo-French work, which was to have been written partly by Englishmen and partly by Frenchmen, and circulated in both countries. These persecutions inflamed his hatred of arbitrary power. In 1785, during the insurrection of the Wallachians, he published two letters, addressed to the Emperor Joseph II., 'On the Right of Emigration,' and 'On the Right of Insurrection.' He continued to be indefatigable with his pen, but most of his works possessing only a temporary interest, have long since fallen into oblivion. He warmly favoured the revolutionary party in the English North American colonies, and wrote a good deal in support of their cause. He was an emancipationist, and one of the first members of the French society called 'The Friends of the Blacks.'

The freedom of his pen brought him again into difficulties, and on learning that a lettre-de-cachet was signed for his arrest, he fled and took refuge in England. After a short stay in London he crossed the Atlantic to the United States, where his love of republican institutions was increased by seeing their operation in that country.

In 1789 the progress of events in France enabled him to return home, and use his pen without any fear of the Bastille. He floated forward on the revolutionary torrent. He was elected member of the first municipal council of the city of Paris, and in that capacity received the keys of the captured Bastille, on the 14th of July. Soon after he was elected by the citizens of Paris to be their representative in the Constituent Assembly. He joined the party called the Gironde, and co-operated with Vergniaud, Guadet, Gensonné, the Provençal Isnard, and others, who were weak and imprudent politicians, but among the most eloquent and best men in France. 'The opinions of Brissot, who desired a complete reform; his great activity of mind, which enabled him to re-produce himself in the journal called "The Patriot," at the tribune of the Assembly, in the club of the Jacobins; his precise and extensive information respecting the situation of foreign powers, gave him a great ascendancy at a moment of struggle between the parties and a war against all Europe.' (Mignet, *Hist. of the French Revolution*.) The Girondists triumphed over the Feuillans or moderate constitutional monarchy party; but they were in their turn defeated in much the same manner by the Jacobins or party called the Mountain, who went as much farther than the Girondists, as the Girondists had gone farther than the Feuillans. The Gironde was nothing more in the revolution than a party of transition from the power of the middling classes of society to that of the mob. The members of it put themselves and their country in a position from which there was no escape except through seas of blood. During the fearful struggle Brissot incurred the deadly hatred of Robespierre, which was equivalent to a death-warrant. On the 2d of June, 1793, a sentence of arrest was passed against him. Brissot was calm and firm, and at first not

inclined to do anything to escape death, but on the entreaties of his family and friends he attempted to get to Switzerland. Being arrested at Moulins, he was carried back to Paris, and brought before the revolutionary tribunal, where the Jacobins in vain endeavoured to destroy his courage and self-possession. The only regrets he expressed were at the political errors he had committed, and at leaving his wife and children in absolute poverty. He was condemned, of course, and went to the guillotine with twenty other Girondists, his associates and friends, on the 31st of October, 1793, just nine months and ten days after he had voted the death of Louis XVI. (whose life however he attempted to spare), and fifteen days after the execution of the Queen Marie Antoinette. They marched to the scaffold with all the stoicism of the times, and singing, as it was the fashion to do, the *Marseillais*, or song of the republic. They all died with courage. Brissot was only thirty-two years old. His companions in death were Vergniaud, Gensonné, Fonfrède, Ducos, Valazé, Lasource, Silléry, Gard Carra, Duprat, Beauvais, Duchâtel, Mainvielle, Lac Boileau, Lehardy, Antiboul, and Vigée.

Brissot stood at the head of the party which he embraced. At one time in his political career a large section of a house was called after his name, 'The Brissotins.' He was singularly honest and disinterested: he sincerely wished the good of his country, but he knew not how to accomplish it. His biographers have recorded of him, that he was mild and simple in his manners, small of stature, somewhat deformed in person, and that his countenance was frank, open, and expressive. After his return to America, he affected the simplicity of dress of the Q (*Biog. Univ.* ; *Biog. des Contemporains* ; Mignet, *la Revolution Française* ; and Lacretelle.)

BRISTOL, a sea-port town in the West of England in 51° 27' 6.3" N. lat., 2° 35' 28.6" W. long., 108 London and 313 from Edinburgh, direct distance, the counties of Gloucester and Somerset, and at the mouth of the rivers Avon and Froome, about 10 m. west of the course of the water, or 7 m. in a straight line from a spot where the Avon enters the Bristol Channel.

Etymology of its name.—The most ancient name of Bristol on record is *Caer Odor*, the city of the gap, through which the Avon finds a passage to the sea. To this was added the local description of *Nant* in the valley of the baths. Much diversity of opinion existed with regard to the etymology of its name. Brissot; and much of this uncertainty probably arose from the looseness of its orthography in ancient times. Seyer, in his history of Bristol, has enumerated several etymologies, mostly from different sources, and even these are not all. But the only modern etymologies that are material, as serving to lead to the origin of the name, are *Bristuit*, and *Bricstow*. The Rev. Dr. Chatterton derives it from *Brictric*, the last king of the South Saxons, who commenced his reign A.D. 784, and died A.D. 800, supposing it to have been originally called *Bricstow*. It appears also that *Bricstow*, or a similar name, existed from 1064 to 1204; and it is remarkable that the name of Lord of Bristol at the earlier of these two dates is *Bricstow*. Withstanding this, the following conjecture of the name seems by far the most probable. The word 'bric' signifies a break, a breach; thus be a literal translation of *Odor*; and the British prefix 'caer,' and substituting 'stow,' we should at once arrive at *Bricstow*, a name which is most descriptive of the location of the town.

Historical Sketch.—Of the footing which the Romans obtained in this part of England sufficient evidence is afforded by the coins of the Emperor Vespasian, afterwards emperor of Rome, found at the Roman station *Abona*, at Sea Mills, upon the coast of Westbury-upon-Trym, has with great probability been ascribed. It is certain that the Romans obtained possession of Bristol; and in the time of Constantine assumed by Seyer for its foundation, the town was walled and gated, which inclosed the area of the most central portions of the town. The town was taken by the Roman troops, and at the epoch of the Saxon invasion (A.D. 495), who first carried the name of Bristol to England, Bristol formed a

of Cornwall, whose jurisdiction extended over all Somersetshire and part of Gloucestershire. It is recorded in Ellis's 'Specimens of Early English Romances,' that 'a vast army of Sarazens (pagans) from Denmark made an attack on Bristol with 30,000 men, in which they were so completely defeated that not five of them escaped.' Whatever may be thought of this tale, or rather of its authority, it is impossible that Bristol could have escaped from a strife which raged for a time so hotly around its walls; but it appears to have maintained its independence until the invasion of Crida, who in 584 totally subdued the country upon the Gloucestershire side of the Avon, and erected upon the ruins of the ancient governments the Saxon kingdom of Mercia, of which, it is to be presumed, Bristol formed the frontier city bordering upon the neighbouring Saxon state of Wessex, and divided from it by the Avon. Caer Odor had now become Bric-stow; and in 596 Jordan, the companion of Augustine, in his mission for the conversion of the Anglo-Saxons, preached on the spot now called College Green, which subsequently became the site of the monastery, built in honour of the chief missionary, and now the cathedral church of Bristol. In 930 Bristol was held under Athelstan by Ailward, as Lord of the Honor. Ailward was a Saxon nobleman of considerable power and wealth in the adjoining counties: he was succeeded (980) in his lordship by his son Algar. Upon the coins of Canute the name of the town first appears as Bric and Bricstow; so that at this date (1017) it must have possessed some importance. Indeed from this time its rise as a port may with certainty be dated; for we find that upon the condemnation of Earl Godwin (1051) his sons Harold and Leofwine escaping to Bristol, thence embarked for Ireland; and that after their reconciliation with the king, and the employment of Harold by Edward to chastise the Welsh, that chieftain embarked a body of men on board his fleet from Bricestow. We gather also from the life of Wolstan, who was consecrated Bishop of Worcester A.D. 1062, that Bricstou was, from its convenience as a port, especially for embarkation to Ireland, used commonly for the purpose of exporting slaves: a practice which Wolstan denounced to the Conqueror, who forbade, but failed utterly to extinguish, the inhuman traffic by a royal edict. On the accession of William, Brictric then held the honour in succession from his father Algar; but his estates were seized by William and himself confined in Winchester Castle, where he died. The profits of the Honor the king gave to his queen, and resumed them at her death. To the early part of the Norman period the addition of the second wall around the town is ascribed; probably it was built together with the castle by Godfrey bishop of Coutances, in Normandy, and of Exeter, in England, who followed the Conqueror to this country.

The castle is not mentioned by name in the Domesday Book, compiled 1086; and the first historical notice of it occurs on the death of William I., when it was fortified and held by Godfrey on behalf of Robert, the Conqueror's eldest son. It must at that time have been a place of considerable strength, for the insurgents in the west made it their head-quarters, bearing thither all the plunder accumulated in foraging the adjoining counties, until, on the final success of Rufus, Godfrey retired into Normandy, and the king, in whom the honor then was, conferred it upon his cousin Fitzhamon. By referring to Domesday Book, we shall be enabled very readily to trace the actual position of Bristol at the time of the Norman invasion. In that compilation the burgenses of Bristol are repeatedly referred to; Bristol then was a burgh or walled town: it is also recorded that the burgenses paid to the king in reserved rents, fines, customs, and tolls, 57*l.* 6*s.* 8*d.* It follows that it was a royal burgh, the tenants in which held for the most part immediately under the king. [БОЖОВИЧ, p. 195.] The local government of the city was vested in a prepositor or chief magistrate, who acted under the *custos* of the castle, the *caput honoris*, the constable of which was either the lord of the Honor when he made it his residence, or an individual holding under him or the king. It does not appear that the prepositor was a salaried officer, although, as he was *de virtute officii* escheator to the king, his reasonable charges on that head were defrayed: but the town was charged with the maintenance of the castle; and in addition to the sum recorded in Domesday Book as paid to the king, there is this item, — 'And to the Lord Bishop [Godfrey] £28, which was the precise sum annually paid by the town to the constable of the castle for several subsequent reigns. The

prepositor, at the accession of William I., was Hardyng, a wealthy merchant of the town, and the founder of the Berkeley family. He was continued in his office by the Conqueror, and was succeeded on his death, which did not occur till the reign of Henry I. (1115), by Robert, commonly called Fitzharding, and first Lord of Berkeley. But during this period that part of the present city which lies upon the Somersetshire side of the Avon, and comprises the parishes of Redcliff, St. Thomas, and Temple, possessed a separate jurisdiction and a prepositor of its own. It was called the Vil de Radeleeve, and was in every respect the rival of the neighbouring town until the two were incorporated. The estimated number of houses contained at this time within the walls of the town was 480; the population could not have far exceeded 3000. To Robert Fitzhamon the grant of Rufus appears to have been absolute. Robert founded the abbey of Tewkesbury, conferring on it the church of St. Peter at Brigston, and a tithe of the rents of the town; and as warden of the Welsh Marches, (an office attached to the Honor, and bearing somewhat onerously upon the townsmen, who were charged with checking the turbulent Welsh,) he conquered the co. of Glamorgan, making Cardiff his capital. He died 1107, leaving his three daughters to the wardship of Henry I., to which king he had, on the death of Rufus, transferred his allegiance. Henry gave the eldest daughter, Mabile, in marriage to his natural son Robert, on whom he conferred the Honor, creating him first (Norman) Earl of Gloucester: the annual value of the earldom has been estimated at 1000*l.* in the money of the time. Robert Earl of Gloucester has been justly esteemed the first man of his age; and to his care, after the capture of Duke Robert of Normandy (1126), Henry confided his unfortunate brother, whom the earl for some time confined in the castle at Bristol, until, for greater security, he was removed to Cardiff Castle, where he died. On the death of Henry, Earl Robert maintained Bristol and its castle on behalf of his sister Matilda, against the usurpation of Stephen. The castle he is said to have built; but as a castle was certainly in existence, the probability is that he enlarged its site and added to its defences only; and this he appears to have done most effectually, for under him it became one of the largest and strongest fortresses in the kingdom. It occupied about 6 acres of ground, and William Botoner, surnamed Wyrcestre, states that the walls were 25 ft. thick at the base and 9½ at the top. Stephen was brought to this castle after his capture at the battle of Lincoln (1140), and kept prisoner until the following year, when he was exchanged against Earl Robert.

During this stormy period the prepositor of the town, Robert Fitzharding, was employing a portion of his wealth in erecting the abbey of St. Augustine, now the cathedral church; and William of Malmesbury writes that the port was at this time 'the resort of ships coming from Ireland, Norway, and other countries beyond sea; lest a region so fortunate in native riches should be destitute of the commerce of foreign wealth.' Earl Robert died at Bristol of a severe fever in November, 1147, having previously founded the priory of St. James (subsequently the parochial church of that name) in Bristol, in the choir of which he was, at his own request, interred. He was succeeded in his earldom by his son William. Henry II. on his accession (1154) resumed the royal jurisdiction over the towns, castles, &c., which belonged to the crown, by taking them into his own hands; but 20 years elapsed before he obtained possession of the castle of Bristol, when (1175) the earl surrendered it into the king's hand, constituting the king's son his heir, the king at the same time contracting for the marriage of his son John with Isabel the earl's daughter. The rise of Bristol into a free municipal town may now be said fairly to commence, and its progress was rapid in the extreme. For the services rendered to the king's mother during the wars with Stephen the burgesses had a right to expect favours at his hand; but the first gracious act on record is a charter, granted 1164, in which they are exempted from toll, passage, and custom throughout all the king's lands wherever they shall come, they and their goods. At his father's death, Prince John was Earl of Moreton (Mortagne, Normandy) and Lord of Ireland; and by his marriage with the Lady Isabel, solemnized at Marlborough, August 29, 1189, he became also Lord of Bristol, to which city he in the following year granted a charter, which is historically most valuable, for it recites all the existing privileges of the place. From this document we

and that the burgesses were exempted from pleading or being impleaded without the walls of the town, except in cases of foreign tenure, in which the town had no jurisdiction; from the fine levied by the lord on the hundred in which murder had been committed; and from wager of duel, unless appealed to on the death of a stranger killed within the walls: that no one could take an inn (hospitium) within the walls without leave of the burgesses; that they were exempt from toll, lastage (privileged portage), pontage and all other customs throughout their lord's land; and that they could not be condemned in money above 40s.; that the hundred court was held once in the week, and that the burgesses had power of recovering all debts, &c., throughout their lord's land; that lands and tenures within the town were to be held according to the customs of the place; that pleas with regard to all debts contracted in the town must be there held; and that in case of tolls taken against the charter, the prepositor could enforce restoration by seizure; that strangers within the town could not buy leather, corn, or wool, but of a burgess, nor sell wine except from a ship, nor cloth except at the fair, nor remain in the town to sell goods longer than 40 days; that no burgess could be elsewhere detained for any debt except of his own or for one in which he had become surety; that he could marry without the license of his lord, and that the lord had wardship only so far as regarded the lands in his own fee; that no one could take tynne (a tax levied in kind in those primitive times *ad libitum*) except for the use of the lord earl; that the burgesses could grind their corn where they chose; that they were not obliged to bail any one, not even their servants; and that they were allowed to have all their reasonable guilds. These existing privileges the charter confirms: it grants in addition the privilege of holding property in free burgage on land-gable service (payment of ground-rent), and of making improvements by building upon the banks of the river and upon the other void places of the town. This may serve to show us what the feudal system was, as well as to indicate very nearly what was the social position of Bristol at the time the whole of these privileges were extended to the men of Redcliff.

On the accession of Henry III. he was crowned at Gloucester, and the barons being then in arms against the tyranny of the late king, Henry came with his retinue to Bristol for greater security. Here a reconciliation was effected; and an important alteration took place in the municipal government of the town. Hitherto the only local magistrate appears to have been the prepositor, who also seems to have acted as the king's manorial steward; but now the privilege of choosing a mayor and two prepositors was granted to the burgesses. The functions of the latter from henceforth were similar to those of bailiffs or sheriffs, into which offices their own subsequently lapsed; and upon the mayor devolved the duty of escheator to the king. In the 8th of his reign (1225) Henry let the farm of the town (hitherto granted to individuals) for the first time to the burgesses themselves, for eight years, at the advanced rent of 245*l.* per annum, saving to the king certain bailiwicks in the suburbs, and of the prisage of beer so much as should be necessary for the use of the constable of the castle and his people—the rest for the burgesses. But the rents and profits so leased did not comprise the whole of the revenues of the town; for in the charter roll for the 11th of this king's reign, preserved among the records of Chancery, it is written that the king had granted to Jordan Laurence and his heirs the trona and pesage (customs paid for the weighing of wool and merchandize) in the town of Bristol, for the 'service of 10*s.* per annum.'

In the 26th of his reign the king again farmed the town to the burgesses for a term of twenty years, at a rental of 250*l.*; and at the termination of ten years the lease was renewed for a term of sixty years, at a rental of 266*l.* 13*s.* 4*d.* The course of the river Froome within the town had previously been to the E. of its present channel, so that it passed through a part of the town now called Baldwin Street, joining the Avon a little below the bridge, and flooding the ground, until those parts now occupied by Queen Square and the quay were converted into a marsh; and the anchorage was confined to a small stretch of quay above the bridge, where the vessels lay on a rough and stony bottom, with a very high and inconvenient place of landing. The trade of the port had now however outgrown the extent of this quay, and the burgesses resolving to cut a new course for the Avon, the ground necessary to the purpose was ceded to the

mayor and commonalty by the abbot of St. Augustine's for the sum of ten marks. The work was commenced in 1239, and completed about the year 1247. The extent of quay obtained by this spirited proceeding was 2400 feet; and the channel of the river was dug 18 ft. deep and 40 yards wide, at a cost of 5000*l.* For the completion of this undertaking, which for its day well deserves the title of great, the burgesses of Bristol obtained a writ of mandamus from the king to the burgesses of Radcliffe, requiring them to render their assistance; and in the year of its completion both vills. were by royal charter incorporated into one. A stone bridge was immediately commenced for the better means of communication between the united towns, the wall of the town was extended so as to embrace the new district, and Redcliff shortly became the seat of those manufactures which, from the thirteenth to the sixteenth century, almost supplied England with cloth, glass, and soap. In the year 1243 it is recorded that the latter article of Bristol manufacture was first sold in London.

During the unsettled state of the kingdom in the reign of Edward II., consequent upon the quarrel of the king with his barons, the town was for some time held by the citizens against the sovereign, and the royal authority completely set aside. This rebellion originated in an alleged attempt of fourteen of the principal citizens (*de majoribus*) to usurp the management and disposal of the corporate funds, to the exclusion of the burgesses at large, in whom the right was; a usurpation which was resented by the burgesses, who complained also that a custom called cockett was levied upon their goods contrary to their ancient privileges. Upon appeal to the king, a special commission of Oyer and Terminer was issued to inquire into the case; but the commission was objected to by the popular party, on the ground that foreigners (that is, persons not burgesses of Bristol) were put upon the inquisition or jury; and a tumult arising during its sitting in the Guildhall, the commissioners narrowly escaped with their lives. The party indicted for this offence, refusing to appear before the justices at Gloucester, were outlawed; and the burgesses retaliated by banishing the obnoxious fourteen from the town, seizing upon their property, and collecting the king's rents and customs to their own use. The rebellion began in 1311; and the town 'held its own' for the space of 40 years, during which time it continued to exist, a little republic in the heart of a great monarchy, if a sovereignty torn with dissensions can properly be termed great. The local government was carried on according to its ancient form, with this exception: the burgesses held the authority of the castle at defiance, and, for their better security, built against it a strong wall with forts, traces of which, of an immense thickness, have been recently discovered in making excavations on its site in Dolphin Street, antiently, from this fact, termed Defence Lane. In the spring of 1314 the city was invested on the part of Edward by the earl of Gloucester, at the head of an army of 20,000 men, raised by the sheriffs of the adjoining counties of Somerset, Gloucester, and Wilts, under writs issued in the midsummer of the preceding year; but the townsmen, encouraged by their mayor John le Taverner, stoutly resisted their besiegers, and the king requiring men for his Scottish wars, the siege was raised. About the latter end of 1316, the burgesses refusing to submit without a full admission of their ancient privileges and exemption from the obnoxious tax, the town was again besieged, and, after a few days' resistance, surrendered to the army of the king. The 14 majores were reinstated, and a general pardon was procured from the king on the payment of a considerable fine and the arrears of the cockett. The only charter of this king to the town was one granted in the 15th of his reign, in confirmation of 28th of Edward I.

In 1327, the year succeeding the accession of Edward III., the castle and borough of Liverpool were together taken, and worth 30*s.* 10*s.* per annum; while three years afterwards the town of Bristol was farmed at a rental of 240*l.* In the 5th of his reign the king granted to the town the privilege of receiving, for the term of four years, a custom on goods coming to the town for sale, in aid of repairing its walls. The articles taxed will show the nature of the traffic at that time: they consist of live stock, agricultural produce, fish, wine, wool, skins, linen cloth, and cloth of woad, 'Irish Galway cloths,' salt, ashes, honey, iron, lead, brass, tallow, millstones, copper, leather, oil, and wax. The copy of this grant is still preserved among the records

of the Court of Chancery. In the 5th year of his reign Edward granted a charter to the burgesses, confirming 31st of Henry III. and 15th of Edward II., and providing, that to prevent waste and fraud the mayor should have ward over the goods and chattels of orphans, and that the burgesses should have view of frank-pledge in the suburbs of the town; a privilege of some importance, as the right of the town to hold court in Radcliff Street was contested by the lords of Berkeley. For the encouragement of the home manufacture of cloth, the use of the foreign article was, in 1337, expressly forbidden; and of the promise of golden profit which the prohibition held out Bristol appears to have availed itself with great spirit. Some of the principal townsmen erected looms in their dwelling-houses, and on a tax being levied on the new trade by the local powers, it was relieved from so impolitic an impost on petition to the king. In the 15th of Edward III. the parliament having granted a subsidy of 30,000 sacks of wool, London was rated at 503 bags, Bristol at 63, and York at 49; and in the 27th of the same reign a wool staple was fixed at Bristol, and the trade was prosecuted with such activity, that the suburbs of the town became peopled with the makers of cloth. The trade continued to prosper until the reign of Henry VIII., when 'cloth of Bristol' was held in high esteem; and it lingered about the city till 1739, when the electoral body of freemen, in number 3899, then residing within the town, contained 300 weavers: the trade has since altogether retired into the adjoining counties.

Recurring to the history of the town during the reign of Edward III., we find that in 1336, the king requiring vessels of the several ports for the defence of the kingdom, Bristol was commanded to furnish 24 vessels, and Liverpool one small bark. In the war with France, which commenced in the spring of 1345, 642 men were raised in Bristol and Gloucester; Bristol also contributed 22 ships with 608 mariners, and London the same number of vessels with 662 marines.

A most important step in the municipal history of the town was taken at this time. A charter was granted in the 47th of the king's reign (and confirmed by Parliament, a circumstance which has since caused much difficulty with reference to the subsequent royal charters) to the burgesses, in consideration of the good services done by them to the king by their shipping, and for 600 marks. Previously, the town being partly in the co. of Gloucester and partly in that of Somerset, the burgesses had been put to considerable expense and inconvenience in their attendance at the assize towns of Gloucester and Hereford. By this charter both were in future obviated by the erection of Bristol into a co. of itself. By the same charter it was ordained that every future mayor should, by virtue of his office, be escheator; that the burgesses should annually choose three persons, out of whom the king should select one to be sheriff; and that these might account at the king's exchequer for the issues of the town by attorney; privilege was also given to mayor and sheriff each to hold his monthly court, and to collect the profits thereof to the use of the commonalty; it was also provided that the new mayor might be sworn in before his predecessor instead of by the constable of the castle as heretofore, and the sheriff before the mayor; that the burgesses might hold the gaol, and the mayor and sheriff have cognizance of all pleas, and hear and determine all felonies, saving all fees, and the jurisdiction of the Tolzey Court to the crown; that the mayor for the time being should have power to recognise deeds, receive probates of wills and put them in execution; that the town should not be burthened to send more than two burgesses to parliament; and that in cases to which existing privileges and customs did not apply, a remedy should be provided, and a power of local taxation be possessed by a council of 40, to be elected from time to time by the mayor, sheriff, and commonalty of the town, the money so to be raised to be expended for the necessities and profits of the town, by two honest men chosen by common consent, and accountable for the same before the mayor and others deputed for the purpose by the commonalty of the town. By this important charter the jurisdiction of the castle was confined to its own precinct; and the independence of the town was at once established.

Three charters were granted to the burgesses by Richard II.; the first two are merely confirmatory of preceding privileges, and were given in the 1st of his reign (1377), in which year also a royal grant for murage, for the space of

ten years, was made. The new articles of traffic on which imposts are granted in this document, a copy of which is still preserved in the records of the Court of Chancery, are timber, coal, bark, flax, hemp, pitch, tar, wax, pepper, fruit, almonds, and chalk. The third charter adverted to, granted in the 19th year of the king's reign, provides that, on royal visits, the king's steward and marshal shall not exercise their offices in Bristol. The value of this privilege will be understood when the reader is informed that the jurisdiction of these officers within the verge of the king's residence superseded all others. In the previous year (1395) the town was granted to the mayor and commonalty, for the space of twelve years, at a rental of 100*l.*, chargeable in addition with certain expenses for the support of the castle and the keeper of the royal forest at Kingswood.

A charter granted in the 24th year of his reign by Henry VI. exempted Bristol from the jurisdiction of the Admiralty in consideration of 200*l.* freely granted to the king in his necessities. The value of this privilege will be understood when it is explained that the Court of Admiralty claimed to determine all cases occurring *super altum mare*, and that at this period the trouble and expense of prosecuting a suit in the metropolis were infinitely greater than at present: by the charter an admiralty jurisdiction was granted to the local municipality. In 1437, in the reign of Henry VI., Clement Bagot, the then mayor and escheator, rendered in an account to the Exchequer, still preserved among its records, which enumerates the various sources of revenue which constituted what was called the ferm of the town, and which will to some extent show what was the state of commerce. The most important part of this revenue arises from a custom on merchandise. It appears that Bristol had at this early date extended its commerce along the whole W. coast of England, to South Wales and Ireland, and to France and Russia. The only classification of vessels attempted is into ships and boats; of the former there are reckoned 66, of the latter 64; but many of them, from the amount of their cargoes, must have been of large tonnage: 13 ships and 10 boats are distinctly stated to be freighted for going out, and some few others appear to have had parts of cargoes on board having the same destination. The exports by this account appear to have been 500 dozen of cloths, 7 tons, 6 cwt., 4 pipes, and 1 cask of iron, 400 pieces of glass, and 10 gross of cutlery, with various quantities of honey, meath, alum, pitch, wine, salt, fish, and eardys (corduroys). The imports are infinitely more numerous; and among the most material are 12 tons of iron; 10,600 bales of linen cloths (Irish); 829 pieces of tin, averaging 2 cwt. to the piece; 10,575 lamb-skins; 5239 goat-skins; 800 calf-skins; 16,507 sheep-skins, and 4522 others, principally hare and deer; 900 barrels of hides; 39,000 fish in bulk, and 1197 packages, principally barrels and pipes of salmon and herrings; 110 barrels of salt; 12 tun of wine; 43 dickers of leather, and some others, including oil and about 36 packages of fruit. The total amount of customs accounted for on these exports and imports is 21*l.* 16*s.* 10*d.*; for merchandise entering in and going out through the gates of the town, 8*l.* 17*s.* 10*d.*; for the fines and amerements in the court of Tolzey, 15*l.* 6*s.* 8*d.*; and for the mills, 9*l.* 14*s.*, which, with the landgables and rentals of tenements, give a royal revenue from that source amounting to 80*l.* 14*s.* 4*d.* But this income appears to have been very unequal; for in the three successive years these rents and profits severally amounted to 62*l.* 3*s.* 2*d.*, 116*l.* 8*s.* 5*d.*, and 104*l.* 14*s.*

Custom was the antient toll or customary payment at the port and gates of a town; and as there can be no doubt that here it was identical with the present town dues, from which the burgesses have ever been exempt, it would follow that these imports and exports were that part of the trade only which lay in the hands of individuals not free of the town. This may account for the absence of many articles in the list known to have been then imported, and for the smallness of the traffic in others. And indeed it seems certain that a more productive tax was collected under a similar name, and probably payable alike by citizen and stranger; for when at this same date parliament granted a sum for defraying the expenses of the king's household, 266*l.* 13*s.* 4*d.* was directed to be taken out of the customs at Bristol. In the 20th of the same king the Commons ordered 8 ships, having each 150 men, to keep the sea continually, of which number Bristol was directed to furnish 2; and 12 years after, when a fleet was ordered for the

protection of trade, London lent towards its fitting out 300*l.* and Bristol 150*l.*

At the time of Edward IV.'s succession to the crown, 1461, he came, in his progress through the western counties, to Bristol. William Canynges, the most celebrated merchant of his day, the (reputed) founder of the church of St. Mary, Redcliff, was then mayor; and of him it is reported by William of Worcester, a contemporary authority, that he paid to the king 3000 marks for his peace, 'pro pace sua habenda.' This must be understood to refer to the whole fine levied on the Lancastrian party in the town, and which Canynges would have had, in his official character of escheator to the king, to pay into the exchequer. The king appears to have been well satisfied with the transfer of allegiance on the part of the burgesses, and with the ready service rendered on their part; for he immediately, on surrender of the lease previously held under Henry, re-granted the town to the burgesses for ever on payment of the same annual rental: this charter bears date 12th February, 1461, and it was accompanied, or nearly so, by a grant in fee of the customs for murage, keyage, and pavage, and by two charters confirmatory of privileges previously enjoyed. The fame of Canynges requires some further notice. It is recorded by William of Worcester that he employed for the space of 8 years 800 seamen, and every day 100 artificers. The same writer furnishes a list of his vessels, 10 in number, and including one of 900 tons burthen, one of 500, one of 400, and two of 220; and though some doubts have been entertained as to the then existence of a vessel so large as the largest here specified, yet when it is considered that it would not necessarily follow that it should have equalled the size of a modern vessel of the same registered burthen, there does not seem any legitimate reason for disturbing the text. The wealth of Canynges was certainly considerable: in his old age he became a priest in the college of Westbury, which he had founded. Reference has been made above to Canynges as the reputed founder of Redcliff Church; but the honour has been claimed for Simon de Bourton, previously adverted to, for the grandfather of William Canynges, and for William himself. It is certain that a church previously existed on the cliff, and that it continued to exist as the chapel of the Holy Spirit contemporaneously with the present edifice for a considerable period: it is also certain that Simon de Bourton did found a church of St. Mary, Redcliff; and it is no less certain that to the wealth of the Canynges we are indebted for much of the beauty of the present structure. The difficulty may be got over by concluding, not with Mr. Dallaway, that three distinct churches of St. Mary, Redcliff, have from time to time existed on the same spot, but with Mr. Britton, that Canynges completed what De Bourton begun. Mr. Britton has traced in the architecture of the church three distinct æras, which, with considerable ingenuity, he refers to the ages of the three individuals whose claims have been here alluded to. Of the general character of the edifice (one of the finest specimens of parochial church architecture in England), the view given in No. 169 of the 'Penny Magazine' will serve to convey a tolerable idea; and the sketch opposite of the North Porch, the grand though disused entrance, may furnish some conception of the labour bestowed in the architectural decorations. It is a splendid specimen of its kind, but unfortunately hidden from general observation by the near approach of the surrounding buildings.

In 1486 Henry VII. came to Bristol, and the burgesses, through the medium of a pageant of king Brennus, complained to him of a decay in the prosperity of the place. Brennus was made to say that he had left the town in possession of 'riches and wealth manifold,' but that since that time 'Bristow had fallen into a decay,' from which there was no hope of recovery without some remedy at the hands of the king, which was accordingly prayed. Leland reports that 'after evensong the king sent for the mayre and sheriff, and part of the best burgesses of the town, and demanded of them the cause of their poverty; and they showed his grace that it was by reason of the great loss of ships and goods which they had suffered within five years. The king comforted them, that they should set on and make new ships, and exercise their merchandisc, as they were wont to do: and his grace would so help them by his means, like as he showed unto them; so that the burgesses of the town told me they had not heard these hundred years from any king so good a comfort.' The follow-

ing year his 'grace so helped them' by extorting from the town a benevolence of 500*l.* in levying a tax of 5 per cent. upon each of the commons worth more than 20*l.* in goods. his plea was that their wives went too sumptuously apparelled. The burgesses however obtained from him in the same year a charter confirmatory of their former privileges. In 1499 an important charter was granted by Henry VIII. From this charter we learn that the town then possessed a recorder, which officer and five others, to be chosen by the mayor and common council, were appointed aldermen with powers equal to those exercised by the aldermen of London. In future it was provided that the mayor and aldermen, of whom the recorder must always be one, should exercise the power of deposing any member of the body and of filling all vacancies. To the mayor and commonality of the town was given power to elect two bailiffs annually, who were also to act as sheriffs, and to appoint the common council of 40 as before, in whom the local government should be vested. By the same charter the office of water-bailiff was previously in the crown, was ceded with all powers and perquisites to the town on payment of four marks per annum into the exchequer; and the mayor and aldermen were empowered to deliver the gaol, saving all fines and fees to the crown.



[North Porch of Redcliff Church.]

From the temporary stagnation of trade Bristol was recovering, and entered with spirit upon voyages of discovery under Sebastian Cabot, a native of the town, the most experienced navigator of his age. The name of the vessel which first touched the shores of the vast continent of America was the *Matthew* of Bristol, and the earliest letters patent on record for the discovery and colonization of new lands were granted to three merchants of Bristol in conjunction with three Portuguese. The history of Bristol during the reign of Henry VIII. is principally a history of the Reformation within its walls. Among the suppressed religious houses of the greatest note was the monastery of St. Augustine, now the cathedral church and the hospital of the Gaunts, now the mayor's chapel; originally founded by the Berkeleys after their intermarriage with the Gaunts, barons of Folkinghame. Henry VI. founded upon the ruins of the abbey lands a bishopric, the first erecting the town into the dignity of a city and bishop's see: it originally formed part of the diocese of Salisbury. The abbey he converted into a cathedral church.

erecting a dean and chapter therein. The Gaunts chapel and lands he sold to the corporation. Speed, in the list of suppressed religious houses, contained in his chronicle of England's monarchs, gives as the value of this hospital, which was a charity for orphans, 140*l.*; the value of the monastery he states at 767*l.* 15*s.* 3*d.*; and of Westbury College, to which Canynge was so large a benefactor, and wherein, as has been stated, he ended his days, 232*l.* 14*s.* In the year following, 1546, a mint and a printing-press were set up in the castle. On the accession of Elizabeth she granted (1558) a charter confirmatory of ancient privileges; and in 1561 the city was finally exempted from the charge of keeping the marches of Wales.

In 1578 it is recorded that the *Aid*, a vessel of 200 tons, came into Bristol, bringing with her an Esquimaux, his wife and child. The *Aid* had returned from an unsuccessful attempt to discover a North-West Passage: the name of her captain was Martin Frobisher. In 1581 the queen granted a new charter, confirming that of Henry VII. granted in the 15th of his reign, and increasing the number of aldermen to 12. When preparation was made to oppose the Spanish Armada, Bristol contributed 3 ships and 1 pinnace; London, 16 ships and 1 pinnace. A return of ships belonging to the United Kingdom in this year gives, of ships above 100 tons, to London, 62; Bristol, 9; above 80, London, 23; Bristol, 1; and under 80, London, 44; Bristol, 27: in which there appears either to be some mistake, or that the commerce of the kingdom had materially declined. The annual receipt of customs during the reign of Elizabeth was at all the ports, London excepted, 77,000*l.*, of which sum Bristol paid 5000*l.*

Six years after the accession of James I. (in 1609), Newfoundland was colonized from Bristol. In 1630, in consideration of the sum of 959*l.*, Charles I. granted the whole of the lands, buildings, and hereditaments connected with the castle to the burgesses and commonalty of the town, to be holden by them and their successors for ever in free soccage at a rental of 40*l.* per annum. In 1631 the merchant adventurers of Bristol fitted out the *Henrietta Maria*, of 80 tons, under the command of Capt. James, who sailed from Kingsroad on the 3rd of May in that year, purposing the discovery of a North-West Passage to China, to which enterprise the merchants of this country were then excited by the report of the immense wealth acquired by the Spanish, the Portuguese, and the Dutch, in their traffic with the East. Capt. James's crew consisted of 20 men and 2 boys; he proceeded as far as lat. 52°, where, finding his course further impeded, and the winter setting in with danger of injury to his vessel, he adopted the bold expedient of sinking her in the bay named after himself, and wintered on shore. In July 2, 1632, the vessel was raised again, and the adventurous crew proceeded as far as lat. 65° 30', when, finding further perseverance useless, they shaped their course for England, and arrived in Bristol in October.

In 1634 the customs at Bristol produced annually about 10,000*l.*; for several years following the receipts exceeded 15,000*l.* From this time may be dated the commencement of that struggle between Charles and the people. It began in the demand for ship-money; and on Bristol was at once assessed the sum of 2163*l.* 13*s.* 4*d.*: in 1636 the assessments between Bristol and Liverpool were, according to Rushworth, thus distributed:—Bristol, 1 ship of 100 tons, 40 men, and 1000*l.* charges; Liverpool, no ship, 25*l.* charges. The sufferings of Bristol during the struggle for its possession between the royalists and the parliament were severe. Fiennes reports that the 'riches of Bristol since the stop of trade, and many malignants withdrawing their estates, is much otherwise than is conceived.' To this state of things Col. Fiennes, who held Bristol for the parliament, contributed his share. It was his custom to levy contributions on individuals by a written demand for the supply of the garrison; and during his ascendancy some citizens were executed on a charge of conspiracy, and their estates confiscated by him, from which source he admitted the receipt of 3000*l.* During the royal occupation of the place, the weekly cost of its garrison, and of Bath, Berkeley, and some others, amounted to about 2000*l.*, which was assessed upon the neighbouring country. Bristol paid 150*l.*, the customs of the port, 200*l.*: the proportion borne by the hund. of Redcliff cum Bedminster was 200*l.* per month. Under the parliament the sum of 3000*l.* per month was ordered to be raised for the defences of the city and its

castle; of which sum Bristol paid 200*l.*, and the surrounding counties of Gloucester, Somerset, and Wilts the remainder. In the year 1656 the castle was demolished by order of parliament, their last and best act with regard to Bristol under the commonwealth.

Three years after the Restoration, Charles II. visited Bristol; and in the following year (1664) the burgesses obtained from him a charter of confirmation, with a proviso that the members of the corporation should take the oaths of supremacy and allegiance. In 1682-3 the attorney-general, Sir Robert Sawyer, in pursuance of the king's general attack upon the corporations of the kingdom, moved for a writ of 'Quo warranto' against that of Bristol; and in November, 1683, the corporation, acting under the advice of its law officers, made an unconditional surrender of the privileges of the city into the king's hands. Upon this surrender, which was never enrolled, the king granted a charter confirmatory of all old privileges, but vesting the exercise of them all in the existing executive branch of the corporation, and conferring upon that branch the power of electing its successors. The king however retained in his own hands the power of removing any member by an order in council; and the corporation paid him 500*l.*

In 1687 King James chose to exercise the power reserved by charter of Charles II., and removed by writ twenty-eight of the corporate body, supplying their places with others; but on the issuing of the proclamation for the resumption of charters, October, 1688, the corporation returned to their ancient privileges and modes of election.

By an act obtained 11 and 12 William III., the corporation, for the better preservation of the river, extended their jurisdiction four miles along the course of the Avon inward above Bristol bridge, to the village of Hannam in Gloucestershire; and in the 9th of the succeeding reign the same body obtained a charter from Queen Anne, which, confirming all previous privileges, removed, with every other right of the crown in fines, fees, &c., the power of deposing any member of the corporation by writ of privy council. The reason of seeking this charter appears to have been some question as to the legality of that of Charles, founded in some degree upon doubts respecting the legality of the surrender upon which it was granted.

The following facts will serve to illustrate the condition of the city during the eighteenth century. In 1735 the number of houses in the city was 6701; in 1788 they had increased to 8701, of which, as appears from the returns of land tax then laid before parliament, 3947 paid severally a rental exceeding 5*l.* per annum: the population at this last period was between 70,000 and 80,000. In 1762, Büsching, a German writer on the political and commercial geography of Europe, estimated the number of houses in the city and suburbs at 12,000, and the population of the whole district at 95,000. This estimate is in a note, added, apparently, by the English translator of Büsching: the probability however is that this exceeded the fact. The manufactory of brass was commenced in 1704; that of zinc in 1743. In 1745 the receipt for one year of wharfage, a local toll on foreign imports and exports, was 918*l.*: thirty years afterwards it was 2000*l.* From the year 1750 to 1757 the average net receipts of the customs at Bristol was 155,189*l.*; at Liverpool 51,136*l.*; the net receipt at Bristol in 1764 was 195,000*l.*; the number of vessels reported inwards 2353. In 1784 the customs at Bristol yielded 334,909*l.*; those of Liverpool 649,684*l.* In 1786 the tonnage belonging to the port of Liverpool amounted to 49,541 tons, comprised in 465 vessels; the number of vessels belonging to the port of Bristol in 1787 was 360, with a burthen of 56,909 tons. In the same year the entire trade of Bristol stood thus:—Foreign trade—British vessels in, 255, tonnage 38,502; out vessels 243, tonnage 37,542: foreign bottoms in 69, tonnage 11,112; out 66, tonnage 37,542. Coasting trade—in vessels 1862, tonnage 66,200; out vessels 1632, tonnage 62,139: Irish vessels, in 161, tonnage 9623; out 139, tonnage 9187. From this time Bristol may date her loss of claim to be considered the second commercial place in the kingdom, and the superior importance of Liverpool began to be felt.

The only remaining facts necessary to be mentioned in the historical division of this article are the bridge riots of 1793, and the still more memorable riots of 1831. As to the former, it is unnecessary here to do more than to allude to them; of the latter some account will be given from personal observation.

The Bristol riots of 1831 originated in some disturbances which attended the visit of the recorder, Sir Charles Wetherell, to that city in the exercise of his judicial functions in April, 1831. These disturbances were at first nothing more than the expression of the popular dislike to the recorder, whose opinions on the question of reform, as stated by him in the House of Commons, were at variance with those of a large part of the population of Bristol. Owing to injudicious measures taken to prevent a recurrence of the same scenes at the recorder's visit, Saturday, October 29, 1831, the popular feeling was still more excited, and broke out into open violence. The military were called in, a skirmish took place, and a man was shot by a soldier. This exasperated the populace still more, and it was judged prudent that the obnoxious regiment (the 14th) should be marched out of the town on the following morning. At this crisis, when the mob had forced its way to the cellars of the Mansion-house, and the disturbances, instead of being marked by any expression of political feeling, were assuming the character of mere rioting and plunder, the indecision of the corporate authorities completed the scene of confusion. Several citizens who had attended at the Guildhall on the invitation of the magistrates to assist them in repressing the disturbances were told to go home to dinner, to give the magistrates time to consult over several private letters of advice. A second meeting took place in the afternoon, but in the mean time both gaols had been forced and fired. Opinions were very divided: some refused to assist in dispersing the rioters, because the magistrates would not sanction the use of arms. At this time the rioters were still in possession of the larger gaol, and employed in feeding the flames in the governor's house and debtors' rooms with the furniture; and the few who consented to accompany the magistrates to the scene of disturbance being unarmed, fled at the first charge. Speaking from knowledge acquired on the spot, it is not too much to say that at any time during this day, subsequent to the retreat of the military, a very small force, with good management, might have effectually put down the disturbance; the half-dozen dragoons within the town were quite equal to the defence of the large prison, had measures been taken to garrison it in time; and upon revision of the whole transaction, nothing appears more strange than the character and number of the mob actively engaged in the work of destruction, which seems almost contemptible. From the city prison the mob proceeded to the Gloucester county prison, where, as in the city, the prisoners were all liberated and the gaol fired. In the evening of the same day (Sunday) the Mansion-house was plundered and burned down; from the Mansion-house the destruction was extended to the private dwellings adjoining, and to the Bishop's Palace in another part of the town; and during the night fifty buildings, including the three prisons, the Mansion-house, the Bishop's Palace, and forty-five private houses were consumed, and the property either destroyed or carried away. The total loss was estimated, and perhaps not over-estimated, at 200,000*l.* In the morning of Monday the first check was given to the rioters about six o'clock, by the spirited defence of a private house, then attacked, by its owner and a few friends; and a charge simultaneously made by the few dragoons, upon the enfeebled remnants of the mob, overpowered with their previous excesses, effectually quelled further violence. The public engines were brought to assist in extinguishing the flames; the citizens, who as a body had hitherto withheld support from the unpopular local government, finding that support to be no longer an implied expression of confidence in the magistracy, came forth generally to restore the public peace; and by nine o'clock on the Monday the streets were entirely free from rioters, and the passengers within them were confined to some few persons anxious to ascertain the fate of their friends residing within the neighbourhood of the fires, and a few working men proceeding to their usual employment. Unhappily the definite order was now given, for the first time, by the magistrates, of course in ignorance of the then state of the city, to charge through the streets, and given to troops just recalled to the place, or who had not till then been on the spot: the effect of this measure was as fatal as the charge itself was uncalled for and unexpected. Active search also was made after the stolen property, much of which was recovered, and many captures were made of persons who were plainly implicated in the riots. The list of killed and wounded, as subsequently made out, was, killed

12, wounded 96; but this list included only those who were taken to the public hospitals: many rioters perished in the flames, being suddenly overtaken while engaged in plundering or drinking.

At the special commission, opened on the 3rd of January, 1832, in the Guildhall at Bristol, before the Lord Chief Justice Tyndal, and Mr. Justices Taunton and Bocanquet, 114 persons were indicted for offences committed during these disturbances, the bills against 12 of whom were ignored; 21 were acquitted, and 81 convicted: of the prisoners convicted, 5 were condemned to death, 4 of whom were executed, 1 having been reprieved on the ground of defective intellect: against 26 the sentence of death was recorded; 1 was transported for 14 years, 6 for 7 years; and 23 were sentenced to various terms of imprisonment. Courts-martial were at the same time held on Colonel Brereton, the military commander of the district, and upon the second in command, Captain Warrington: the proceedings of the first court-martial were brought suddenly to a close by the melancholy suicide of Colonel Brereton; the second terminated in the object of it being cashiered, with liberty to sell his commission. Ex officio informations were also subsequently filed against several of the magistrates for neglect of duty, and that against the mayor, Mr. Pinney, came to trial before the Court of King's Bench. The defence was, that the citizens refused to confide in or assist the magistrates, and that consequently, deserted as they were by the public, they could not have acted more efficiently. Upon these grounds the verdict of acquittal appears to have been given; and the other informations were withdrawn. Subsequent to the riots the corporation introduced a bill into parliament for providing compensation for the sufferers; but this measure was taken out of their hands by a committee appointed for the purpose by the rate-payers, under whose care the bill was materially amended and ultimately carried. This measure provided for the awarding of damages by commissioners to be elected by the rate-payers. Of 102 claims taken before the commissioners, 101 have been amicably settled, and only one carried into court; thus furnishing an admirable illustration of the sufficiency of the principle of arbitration and mutual agreement, which in this case has reduced the amount chargeable on the city in respect of the fires to 68,208*l.*, a sum which, if the law had been suffered to take the common expensive course, would have been doubled. The amount annually levied is 10,000*l.*

Present State of Bristol. Local Government.—The corporation of Bristol, prior to 5 and 6 of William IV., was styled the 'mayor, burghesses, and commonalty of the city of Bristol,' and consisted of a common council of forty-three persons; this body was composed of a mayor, two sheriff-tweelve aldermen, the recorder (necessarily a barrister of five years' standing) being one, and twenty-eight common councilmen. The patronage of this body consisted of the direct or indirect appointment to nearly 100 offices, with salaries and fees attached, making average incomes of from 50*l.* to 1500*l.* per annum, and of the presentation to fourteen fellowships, and to two lectureships. The public property under its entire control netted from 16,000*l.* to 18,000*l.* yearly; but this, under the system of leasing on lives, is considerably less than the improbable value: its debt, which in 1825 amounted to 5140*l.* only, had in 1833, when the commissioners of corporate inquiry visited the city, increased to nearly 55,000*l.* But this amount does not contain monies accepted on condition of paying certain endowments, about 31,000*l.*, making its total liabilities at that time 86,000*l.* This total, up to the extinction of the old body, December 1835, had increased by excess of expenditure to a round sum of 100,000*l.* The value of the corporate property is estimated at 398,000*l.*

The jurisdiction of the corporation extended by water over the whole of the old and new course of the Avon, inland into Gloucestershire about four m. beyond the limits of the city, and onwards along the English coast to high-water mark on the Severn, from Aust Passage to Clevedon, including the islands of the Denny, and of the Flat and Steep Holmes in the channel: by land it included eighteen parishes, each governed by a self-elected vestry, and the precincts of the castle; also, for judicial purposes, parts of the out-parishes of Clifton, Bedminster, and St. Philip and Jacob, contiguous to the dock company's works, the whole containing a population of about 65,000 souls. The remainder of the out-parishes were under the jurisdiction of their several counties of Somerset and Gloucester, and contain, in the

immediate suburbs of the city, a population of about 40,000, comprised within five parishes, and principally consisting of the poorer classes.

The governing body of the corporation, commencing with the 1st of January, in the present year (1836), consists of 48 councillors, annually elected by the rated inhabitants, and of 16 aldermen, and a mayor: the city is divided into 10 wards. The jurisdiction is extended over the whole of the suburbs included within the parliamentary borough, which embraces the whole of the out-parishes, except some inconsiderable parts of Bedminster and Westbury, more closely connected with the county than the city. The government of the poor of the in-parishes is vested in a corporation, under 3rd of Geo. IV. cap. 24, but first created by 7 and 8 of William III. cap. 32, consisting of 13 members of the municipal body (late the mayor and aldermen), the 18 senior churchwardens of the 18 parishes, the overseer of the precinct of the castle, and 48 persons elected by the rate payers of the old 12 city wards, 4 to each. The corporation possesses two workhouses, one within the city, antiently the mint, but purchased for the use of the poor in 1698, and principally used for the meetings of the corporation, and as an infirmary; the other, properly the workhouse, a large building on the Gloucester road, purchased in 1831 of the government, by whom it had previously been used as a military depot, and subsequently made part of the city of Bristol by act of parliament. The money relief given by the corporation exceeds 17,000*l.* per annum; the increase of pauperism in Bristol is shown below upon an average of two periods of five years, each ending with the years specified.

	Rate.	In-poor.	Out-poor.	Population.
1805	11,630 <i>l.</i>	305	5089	40,814
1835	31,000 <i>l.</i>	527	4663	59,074

The increase of pauperism at Bristol is disproportionately large, compared with that of England and Wales, and also as compared with the relative increase of the population:—

Cost of Poor.	1816.	1835.	Increase.
England and Wales	6,500,000 <i>l.</i>	7,000,000 <i>l.</i>	27 per cent.
Bristol	15,500 <i>l.</i>	27,000 <i>l.</i>	74 "

Population.	1805.	1835.	Increase.
England and Wales	11,977,693	13,894,578	16.00 "
Bristol	52,889	59,074	11.69 "

To the average of 81,000*l.* given above must be added an average of 4000*l.* of uncollected poor rates annually re-assessed in addition under the last act of incorporation (and separately allowed by the justices, although subsequently added to and collected with the rate) upon the entire 19 parishes and precinct.

In the out-parishes of Clifton, St. Philip and Jacob, and the district of St. James and Paul, the poor are governed by local acts; in those of Bedminster and Westbury they are regulated under the general law. At present the entire parliamentary borough cannot contain less than 110,000 souls; nor can the rack rental be much under 425,000*l.*, of which 200,000*l.* may be taken to be shared by the out-parishes. The pauperism of Bristol is doubtless in part owing to the decline of its trade and manufactures; but the whole district within the boundary has suffered materially from a vicious system of management, and from laxity in collecting the rates generally. By the practice of excusing the occupants of small houses from all payment on the ground of poverty, encouragement is also given to speculative builders and small capitalists, in a neighbourhood where building materials are cheap and there is much poor waste ground, to multiply the erection of small houses. The district of St. James and St. Paul has escaped this evil by means of a local act, under which the landlord is rated, and which has been found to be a sufficient check. The local taxation annually assessed within the 19 city parishes and precinct, including church rates estimated at 2000*l.*, poor's rate at 31,000*l.*, compensation rate 10,000*l.*, harbour rates at 2400*l.*, watch rate at 4500*l.*, pitching and paving rates at 10,000*l.*, and re-assessments of the whole at 6000*l.*, is 65,900*l.*: this total has not averaged less than 65,000*l.* for many years.

The constituency of Bristol return two members to parliament, and have continued to do so from A.D. 1283. Prior to the passing of the Reform Act the electoral right was in the freeholders and freemen resident and non-resident, in all 6000, the proportion of freeholders to freemen being 1 in

7, and of non-resident to resident voters, 1 in 4. The freemen acquired the right either by birth within the walls, the father having been previously enrolled, by marriage with the daughter or widow of a freeman, by servitude to a freeman within the walls, or by purchase; the price of enrolment in the three first cases was about 3*l.*; in the last the presumed value of the exemption from town dues, conferred by admission, regulated the demand; and 300*l.* has been asked. The average admissions of ordinary years were 50; in the years of contested elections they averaged from 800 to 2000, and have sometimes of themselves decided an election, giving a clear majority to the candidate by whom or by whose friends the fees were paid. Contested elections under the old system sometimes involved an expenditure of from 20,000*l.* to 30,000*l.* The Reform Act extended the freeholders' privilege to the out-parishes, removed the abuse of non-residence and of admission to the freedom for election purposes after teste of the writ, and introduced the 10*l.* constituency. The following is the relative proportions of each subsequent registration and polling:—

Registered.				
Year.	Householders.	Freeholders.	Freemen.	Total.
1832	4138	868	5309	10,315
1833	3817	938	5383	10,133
1834	3769	953	5388	10,100
1835	4713	1302	4332	10,347
Polled.				
Year.	Householders.	Freeholders.	Freemen.	Total.
1832	2267	537	4010	6814
1833	"	"	"	"
1834	1192	370	3439	5001
1835	"	"	"	"

For municipal purposes Bristol, as already observed, is now divided into 10 wards. The number of rated properties within the boundary is 19,927, of which 10,428 are within the old city bounds; but the municipal constituency does not at present exceed 4000.

Trade.—The foreign trade of Bristol principally consists, in imports, of sugar, rum, wine, brandy, colonial and Baltic timber, tallow, hemp, turpentine, barilla, dye-woods, fruits, and, when the ports are open, wheat, and, within the year 1835, tea. In 1831 the import of foreign corn was 147,076 quarters; in 1832, the last, 6304 quarters. In 1834 the customs revenue for the three quarters ending Michaelmas was 762,221*l.*; for the three corresponding quarters of 1835 it was 889,778*l.*; the increase of 127,557*l.* is attributable to the new traffic opened with China. The average import of sugar is about 30,000 hogsheads; of tallow, 6799 casks; of wine, 1615 pipes; of rum, 2553 puncheons; of brandy, 115,192 gallons; and in the timber trade about 15,000 tons of shipping are engaged. The principal articles of export are iron, tin, bricks, refined sugar, glass bottles, Irish linen, and manufactured goods. The annexed table will show the comparative state of the direct foreign trade of Bristol for the last 8 years ending January 5, 1835, on the average of the 5 first and the 3 last years ending with the 5th of January of the given dates:—

	Tonnage in.	Tonnage out.	Export value.	Customs.
1832	80,856	52,750	£403,881	£1,208,184
1835	57,369	43,788	203,900	1,078,437

Bristol derives a considerable portion of her supply of foreign produce coastwise under bond principally from London and Liverpool, but also from the minor ports of Gloucester, Newport, Bridgewater, Exeter, Barnstaple and Bideford. In the quarter ending January 5, 1835, a fair average period, Bridgewater furnished to Bristol 225 casks of foreign tallow, about 13 per cent. of the average import; and during the same period 2000 tons of foreign goods were sent round from London and Liverpool. The decline of the foreign trade of Bristol both in imports and exports, with the increased supply coastwise, is attributed to the excess of local taxation in the shape of municipal and other imposts levied upon shipping and goods, and levied almost wholly upon the foreign trade; so that, independent of the direct effect of the tax in contracting the market by the prohibitory scale of duties which prevails, there is a premium held out for supplying the existing demand coastwise, the difference on the tax being more than sufficient to cover the extra cost of transshipments. The

amounts collected average 42,000*l.* per annum, but the pressure is to be estimated rather by what is not received than by that which is. Public attention has been very forcibly directed to this subject within the last 10 years, and considerable though inadequate reductions have been made with a corresponding good effect. The coasting trade of Bristol is very considerable, particularly with Ireland. The imports principally consist of iron, tin, coal, salt, and Irish linens and agricultural produce; the exports, of articles of foreign and colonial produce, particularly groceries, tea, wines, and spirits, and of the manufactures of the place. The total coasting tonnage engaged, on the three years average ending January 5, 1835, is—

	Tons.		Tons.
Outwards	293,200;	including steam-vessels,	134,807.
Inwards	475,684;	do.	do.
			134,615.

Bristol, upon the same average, takes from Ireland among other articles, 1193 tons of butter, 97,966 quarters of grain, 1996 tons of flour, 1114 tons of potatoes, 3507 sheep, 3115 head of cattle, 109,263 pigs; and Ireland takes in exchange from Bristol, 2406 tons of wrought iron, 1325 cwt. of leather, 5790 cwt. of raw sugar, 36,840 cwt. of refined sugars, 59,058 lbs. of tea, and 5509 boxes of tin plates. The coasting trade of Bristol has considerably increased within the last 10 years, the steamers put on in 1826 being very nearly in addition to the previous traffic. The advocates of reduction of local taxation ground their strongest argument on the fact that this increase has been subsequent to and consequent on the entire removal of town dues in 1824 from the coasting and Irish trades, without which the trade by steam could scarcely have had existence: the effect of this on the Irish trade may be estimated from the following figures:—

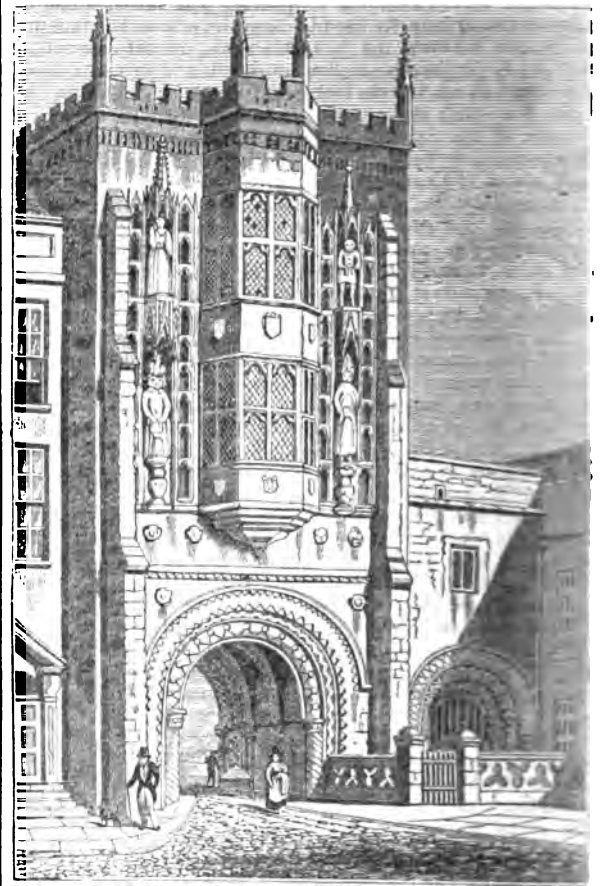
	Tonnage out.	Tonnage in.	Export value British goods.
Year ending Jan. 5, 1824,	10,000	38,709	£126,999
Average 3 years to 1835,	74,573	90,764	280,000

The existing manufactures of Bristol are glass bottles, crown and flint glass, brass wire, pins, sheet lead, zinc, speltre, chain cables, anchors, machinery, drugs, colours, dyes, painted floor-cloth, earthenware, refined sugar, starch, soap, British spirits, tin, copper, and brass wares, bricks, beer, porter, pipes, tobacco, and hats. Most of these are either carried on within the city or in its immediate neighbourhood; but the manufacturing circuit may be considered to extend six miles around, and the principal factories are those for glass, sugar, iron, brass, floor-cloth, and earthenware. The ability of the workers in flint glass and sugar refining has been long known; but manufacturing industry in Bristol is far from being in a flourishing state, and several branches have withdrawn from the place. This, in a neighbourhood which, in addition to a ready port, furnishes a cheap and inexhaustible supply of building materials, water, coals, iron, and provisions, with great facilities of internal conveyance, is mainly to be attributed to that long, prejudicial, and impolitic excess of local taxation which even now compels the manufacturer often to send his goods round to Liverpool for exportation, in some cases to save the difference on the tax, in others because the port does not supply the necessary tonnage for direct shipment.

Public Buildings, Institutions, and Companies.—There are in Bristol 23 churches connected with the establishment and 36 dissenting places of worship. The churches of Bristol present some beautiful specimens of antient English ecclesiastical architecture, the finest being the tower of St. Stephen's, celebrated for the decorated elegance of its summit; the church of St. Mary, Redcliff, of which a characteristic specimen has been already given; and the cathedral church, antiently part of the abbey of St. Augustine, the Norman gateway of which presents one of the finest existing specimens of its style in England. The proportions of the arch are in the original somewhat destroyed by the raising of the ground, and the effect is otherwise weakened by the introduction of modern sashes: in the annexed sketch the antient window is restored.

Forty religious societies connected with the establishment and the various dissenting bodies of Bristol collect annually in furtherance of the peculiar views of their members about 10,000*l.*: this is exclusive of schools, maintenance of places of worship, and chance collections after the Sunday services for specific objects.

The council house is in the centre of the town, partly in Corn Street, partly in Broad Street. It was erected in 1827 at an expense of 14,000*l.*, and is a very plain but convenient building executed by Sir R. Smirke, and surmounted with a statue of Justice by Baily, a native of the city: it communicates with the justice-room, a smaller



[Abbey Gateway, Bristol; antient window restored.]

building annexed. The courts are held in the Guildhall in Broad Street, an antient building. The Mansion House, burnt down in 1831, has not been rebuilt. The gaol was erected of stone, W. of the city, upon the new course of the river Avon, in 1816, at a cost of 60,000*l.*, under the powers of an act of parliament then obtained. It is a singular fact that the mortality is greater in the new gaol than it was in the old prison: this is probably attributable to the greater degree of cold which must prevail in the present than in the former locality. The bridewell, entirely destroyed during the riots, has been rebuilt upon its old site in an enlarged and more convenient form. The principal bridge is that connecting the centre of the town with the Redcliff side of the Avon; it is built of stone, and has 3 arches, the centre one being elliptical with a span of 55 ft., the side arches semicircular, each 40 ft. in span. A swivel bridge of iron, opened in 1827, in the place of the old drawbridge, crosses the harbour, connecting the parishes of Clifton and St. Augustine with the city; and two iron bridges, each with one arch spanning 100 ft., cross the new course of the Avon, severally connecting the city with the Bath and Wells and Exeter roads.

The docks at Bristol were commenced in 1804, under the powers of an act of parliament obtained 43 of Geo. III., by a proprietary body, and were first opened in 1809. They were formed by digging a new course for the Avon south of the city, and by converting the whole of the old channel, from an overfall dam erected above the Bristol bridge in St. Philip's Marsh to the entrance lock at Rowham, including the branch of the Frome within the quays of St. Augustine and St. Stephen, into one floating harbour, about three m. in length. The quays thus inclose one end of the city, extending from Bristol bridge to the small stone bridge across the Frome, where that riv. ceases to be navigable, and

thus form three sides of a parallelogram, the eastern and southern being washed by the Avon, the western by the Frome. The total extent of quay is 2000 yards; but these limits admit of any extension along the banks of the harbour below the town which the increase of trade could require. There are two basins for the temporary accommodation of vessels entering or quitting the harbour, one at Rowham, principally used by large vessels, and containing in length between the locks 275 yards, in extreme width 147 yards: it rounds smaller towards the mouth, and empties itself through two locks into the Avon. The second basin lies south of the quay, communicating with the Avon branch of the harbour, above its junction with the Frome, and emptying itself into the riv. Avon through a single lock, about 300 yards below the iron bridge at Bedminster: it is used by the coasting-vessels, and is about 170 yards long, and averages 80 yards of width. Previous to the construction of this harbour, vessels were suffered to take the ground, and considerable injury and delay were occasioned; important facilities were consequently afforded to the trade of the port by these works.

The estimated expense of the docks was 300,000*l.*; their actual cost exceeded 600,000*l.*, which sum was made up, under the powers of four acts of parliament obtained subsequent to the institutory act, by forced calls upon the subscribers, which raised the shares from their original sum of 100*l.* to 147*l.* each, and by loans. The present capital of the company is 594,059*l.*, of which 268,342*l.* is debt, bearing interest at five per cent.; the remainder of the capital is comprised in 2209 shares, on which the maximum dividend allowed is 8 per cent. In point of fact however they were for a long time wholly unproductive, and the dividend when made seldom exceeds 2 per cent. The income of the company averages about 31,000*l.*, of which 20,000*l.* arises from a tonnage on vessels, 7000*l.* from the rates on foreign goods, 2355*l.* (net) from an assessment of 2400*l.* on the property of the city parishes, and the remainder from lockages, canal rates, boat licences, and other inconsiderable sources of income. The cost of maintenance averages about 7000*l.* The dock rates on vessels and goods far exceed the corresponding rates at the ports of London, Liverpool, Hull, and Gloucester. The rates on goods have been recently reduced. The affairs of the dock company are managed by a directorate of 27 gentlemen, 9 of whom are chosen by the proprietors, 9 by the corporation, in whom the docks vest after payment of the debt and capital, and 9 by the Society of Merchant Venturers, an ancient guild which has outlived its original purpose. (*Corporation Report*, p. 1202.) The custom-house and excise offices, destroyed during the riots, are re-building on their old sites in Queen Square. The Exchange in Corn Street is a fine stone building, erected in 1740, and opened in 1743: the cost was 50,000*l.* It is partly let out in offices, one of the wings forming the post-office, and its rental, including that of the market behind, is about 4000*l.* The interior, however, a fine quadrangle with a piazza, is open freely to, but little employed by, the merchants, who prefer the commercial rooms; and it has recently been proposed to roof the whole in, with a lantern in the centre, so as to convert the interior into a town-hall. The market behind the Exchange is open daily for the sale of dairy produce, vegetables, and butcher's meat: the principal days are Wednesday and Saturday, and the supply is excellent. A similar market is held in Union Street, in the parish of St. James. The other markets are the fish-market, a small stone building erected on the Back near Bristol bridge, in 1831, at an expense of 376*l.*; the rental in 1832 amounted to but 2*l.* 7*s.* 6*d.*; it is principally confined to the sale of oysters; the supply of fish, which for the locality is exceedingly small, being limited almost entirely to the shops. The Welsh market is held on the Back every Wednesday, from the 29th September to the 26th March, in a building erected for the sale of poultry, eggs, fruit, &c. from the principality. The corn-market is held in the Exchange every Tuesday and Thursday. The cheese-market is held in Wine Street, in a building devoted to the purpose: its rental is about 8*l.* per annum. The hay-market is held every Tuesday and Friday in the open street called Broadmead. The leather-market and fellmongers' market are held, the first every Tuesday and Thursday, the second every Wednesday and Saturday, in a building called the Back Hall, in Baldwin Street. The cattle-market, previously to February, 1830, was held in the open street in the parish of St. Thomas, under charter

granted 13th of Elizabeth, for the profit of the almshouse and the aqueduct there, recited then to have been in peril of extreme ruin, from the poverty of the inhabitants of St. Thomas Street, 'in consequence of the decline of the woollen cloth manufacture,' by which they were principally sustained. The site of the new market is upon the new course of the riv. Avon, between the overfall dam in St. Philip's Marsh and the iron bridge which connects the city side of the riv. with the Bath and Wells road: it was erected under 9th of Geo. IV. at an expense of 16,600*l.*, and first opened in February, 1830. The market, which is walled in, covers four acres of ground, and may be extended over two more acres adjoining, which were subsequently purchased at an additional cost of 800*l.* The present limits will accommodate 7000 sheep—2000 under cover, 5000 pigs, 300 horses—with a trotting course 30 ft. wide and 140 yards long, and upwards of 1000 head of cattle. The market is opened every Thursday; and the supply fluctuates considerably, but the average is about—for cattle 500, sheep 3000, pigs 400, horses 80. The tolls produce about 500*l.* per annum. The great market is held on the Thursday preceding Christmas Day, when the shows are generally very fine. Extra markets are also held at the two fairs, the first of which is kept in March in Avon Street, in the parish of Temple; the second in September, in an open space of ground antiently part of the churchyard of St. James's parish, and traditionally the burialplace of those who had died of the plague. Of these fairs the most considerable is the last; both commence on the 1st of the several months, and continue about eight days: they are largely frequented by the graziers and horse-dealers of the West of England and South Wales, by the clothiers of the counties of Gloucester, Somerset, and Wilts, and by the leather-factors of the kingdom. The sales of leather are mostly very extensive. The commercial rooms in Clare Street were opened in 1811, having been erected under the powers of an act of parliament by a proprietary body of shareholders. The chamber of commerce, instituted in 1823, for the purpose of protecting and promoting the commercial, trading, and manufacturing interests of Bristol, is supported by subscriptions of one guinea per annum. The reductions effected in 1825 in the town dues were consequent upon the exertions of this body; of late however its labours have been of very limited utility, and are likely to be shortly altogether superseded by the legitimate guardians of the commerce of the port—the new town council. There are two gas companies at Bristol, the first the Coal Gas Company, erected under 59th of Geo. III., with a capital of 100,000*l.*; the second the Oil Gas Company, erected under 4th of Geo. IV., with a capital of 30,000*l.* By the former company the public lamps of the city are lighted: by the latter the public lamps of the adjoining parish of Clifton. The Great Western Railway Company have already commenced their line, which is to unite Bristol with the metropolis. The capital is 2,500,000*l.* Two companies have since been formed, the first with a capital of 1,500,000*l.*, for a railway from Bristol to Exeter; the second with a capital of 1,000,000*l.*, for continuing the line from Exeter to Plymouth and Devonport. A Bristol and Gloucestershire Railway Company already exists, with a line of 9 m. in extent, from the city of Bristol to Coal-pit Heath. It was opened 6th August, 1835, previous to which a shorter line of 3½ m., connecting the collieries with the Kennet and Avon canal, had been in operation from the March of 1832, during which intervening period the tonnage of coals carried down to Bristol has increased on the line from less than an average of 1000 tons per month, to an average exceeding 3000 tons. It is intended to extend the line from Coal-pit Heath on to Gloucester, the capital for which has been subscribed.

There are eight banking establishments in Bristol, including the branch of the Bank of England and the Savings Bank: two are on the principle of an extended proprietary, one being a branch of the northern and central bank, the head-quarters of which are at Manchester, and the other having its head-quarters at Bristol. The latter, under the title of the West of England and South Wales District Bank, has a capital of 1,000,000*l.*, in shares of 20*l.*, and commenced business December 1835.

The Savings Bank, instituted in 1813, has a capital of 245,811*l.*, due to 6160 depositors; the classification, as per their last published account made up to the 20th November, 1835, is as follows —

No. of Depositors.	Above.	Not exceeding.	Total Amount.
2961		£20	£21,989 0 6
1863	£20	50	57,604 1 3
962	50	100	66,822 0 3
374	100	150	45,253 1 0
226	150	200	38,661 0 6
89	200	"	19,788 1 3
6475 Depositors			£250,087 4 9
30 Charities			2,555 0 6
61 Friendly Societies			7,865 0 3

Total, one year's interest to Depositors included } £260,607 5 6

The Bristol Institution, a handsome building erected in Park Street, by shares of 25*l.* each, is supported by annual subscriptions of two guineas. It was first opened in 1823. It has a reading-room, a small library, and a museum. The museum contains a very fine collection of antique and modern works of art; among them, Bailly's statue of Eve at the fountain, and a complete set of casts from the *Ægina* marbles. It possesses a very fine cabinet of British and foreign insects, Müller's collection of crinital remains, the originals upon which his great work on the natural history of the crinoida was founded; of minerals about 2000 fine characteristic specimens, arranged according to W. Phillips; in conchology above 2500 species; mammalia and birds above 1600. The collections of reptiles, in spirits, of mineral conchology, and of zoophytes, are exceedingly numerous. Several courses of lectures are annually given in the theatre of the institution, where also papers on literary and philosophical subjects are occasionally read by the members of a society associated for the purpose and annexed to the institution. In the large room of the Museum, exhibitions of pictures annually take place, under the superintendence of a local society of artists, associated for the purposes of mutual improvement in sculpture and painting. The Bristol Mechanics' Institution was founded in 1823; it now meets in a building erected for the purpose in Broadmead, and opened 1832. It has a lecture and reading-room, the latter open daily. The Bristol library, in King Street, founded in 1772 by 24 private gentlemen, has now 300 subscribers, each of whom pays an annual subscription of one guinea and a half, and holds a proprietary share of 10*l.* The number of books is about 18,000 volumes, of which 2000 belong to the city, having been left with a building, in which they were contained, for the use of the aldermen and shopkeepers of the town. But the corporation have granted both the books and the building to the subscribers to the library, who, in return, agree to consider the mayor, sheriffs, and chamberlain as part of its members. The Bristol Law Library, in Clare Street, possesses 495 sets of books, including complete copies of all the Reports, and the best theoretical and practical professional treatises. There is also a Medical Library, the members of which meet in a building, formerly the French Protestant Chapel, in Orchard Street, where papers on medical subjects are occasionally read.

The Bristol college was founded in 1830 by a proprietary body for the purpose of affording the youth of Bristol a scientific and classical education at a moderate charge, without quitting their homes. It is situated in Park Row, and is open to students of all religious denominations. Shortly after the opening of the college, in January, 1831, a junior department was annexed to it, in which, by the due admixture of scientific with classical studies, the latter of which are not entered upon before the age of ten, and by the methods employed to cultivate the moral and social qualities of the students as well as their intellectual powers, the most gratifying results have been experienced. Discipline is maintained without recourse being had in any instance to corporal punishment. The Bristol Medical School, established on its present efficient scale in 1834, is held in the Old Park near the Bristol college, and furnishes a complete course of lectures to the pupils: its character, as a school of anatomy, medicine, and chemistry, ranks very high, and the certificates of its professors are recognized at Apothecaries' Hall. There are about 30 charity schools open daily in Bristol; and the number of Sunday schools is considerably larger. Twelve of the 30 day schools are endowed; in the whole are educated about 2000 children, and in the Sunday schools not less than 10,000. The income of the endowed schools is nearly 7000*l.*, for which are wholly maintained, educated, and apprenticed 168 boys and 40

girls; educated and clothed, 90 boys and 88 girls; and educated wholly, 148 boys. The income of all other schools, including that of two societies for educating young men: the ministry in the church establishment and in the Baptist connection, may be estimated at 6000*l.* Among the endowed schools the principal is the Free Grammar School, instituted for the purpose of educating freely all who may resort thither in "good literature." The school has two fellowships at St. John's College, Oxford, and five exhibitions at the same university, and is otherwise very liberally endowed, but under the trusteeship of the late corporation it has ceased to have a scholar.

Among the charitable institutions of Bristol the Infirmary, founded in 1735, stands pre-eminent: it is a large building with accommodation for 200 in-patients, the average number of whom admitted in the year is 1600: the average number of out-patients is 5000; all casualties are admitted on presentation at the door. The income of the institution is 7000*l.* per annum, of which 2200*l.* arises from annual subscriptions of two guineas, the remainder from funded property, legacies and donations. The Bristol General Hospital, instituted in 1832 at the opposite end of the town, is a much smaller establishment, and principally remarkable for its stipendiary ward and self-supporting dispensary, to which the patients contribute a small sum; the object being to restore that desirable feeling of independence among the poor which has certainly suffered in Bristol under the influence of its many local charities. The Dispensary, another establishment, which has two stations at separate ends of the town, visits patients at their houses to the annual number of 2700, including about 500 midwifery cases. Its income arising from subscriptions, averages 1000*l.* per annum. Among other minor institutions of a similar character two for the cure of diseases of the eyes. The one in Marlborough Lane is incorporated by Act of Parliament, and has an asylum and basket manufactory annexed: that in Frogmore Street exists entirely on voluntary contributions, and treats 1300 patients annually, boarding some of them, at an expense of 70*l.* only. There are besides about 40 voluntary charitable societies, which collect and distribute annually among the poor, in food, clothing, medicine, and in other forms, about 15,000*l.* The endowed charities are estimated at 23,000*l.*, of which 6000*l.* consists of moneys left for the purposes of being lent out in various sums and for various terms free of interest, and 9000*l.* is distributed annually among the poor; the remainder is appropriated to the maintenance of schools and other endowments. This statement does not include casual charitable collections, which sometimes extend from 5000*l.* to 8000*l.*

Bristol supports four newspapers, three of which are printed on the Saturday and one on the Thursday in each week. A quarterly journal, devoted to science and literature, is printed at Bristol, of which four numbers have appeared.

The rocks in the immediate neighbourhood of Bristol are composed of carboniferous limestone, coal measures, and a newer red sand-stone formation with the dolomitic sandstone in the last formation there have recently been discovered some saurian remains, which form three genera. The ranges of mountain limestone at St. Vincent Rocks are remarkably fine; the coal-fields extend N. and S. of the city about 28 m., but the beds are comparatively thin, as compared with those of the other coal districts of England. The rocks at Clifton supply a saline spring: the temperature of which from the pump is 74° Fahrenheit, and then evolves free carbonic acid gas. It is principally celebrated in consumptive cases. Its composition is thus given by Dr. Carrick:—"Specific gravity 1.00077. In each part: carbonic acid, 3.5 cub. in.; carbonate of lime, 1.5 gr.; sulphate of soda, 1.5; of lime, 1.5; muriate of soda, 0.5; magnesia, 1.0; total, 6.0." The Hotwell House is beautifully situated beneath the rocks, looking on the river, and the banks of which a fine new carriage road leads from the well round the rocks to Clifton Down; but a readier means of access to the village of Clifton, which is a fashionable retreat—the west end of the city—is furnished by an easy serpentine path, leading up the rocks from behind the Hotwell House. The scenery around Bristol particularly the Clifton Hotwells, is exquisitely beautiful, and the botanical features of the country highly interesting. In a catalogue recently compiled by a resident (Mr. G. H. Stephens) and printed in the West of England Journal, 375 specimens are enumerated as part of the flora found in the immediate neighbourhood. Many of these are

of extreme rarity, and of some the habitats described are the only ones known in the country. The richest fields for the botanists are the downs, the rocks, and the woods of Leigh, on the opposite shore. The phenomena of the tides having recently attracted considerable attention, a self-registering tide gauge, contrived by Mr. Shirreff, the sub-curator of the Bristol institution, was, upon the suggestion of Professor Whewell, erected at Kingroad, about halfway between the port and the mouth of the river, and a register of the several heights of water has been since regularly kept. A series of observations has also been simultaneously made at the entrance to the Bristol docks; and the result has been already so far satisfactory as to induce the publication of an improved set of tide tables for the port, calculated by Mr. Bunt of Bristol, in which the errors of preceding calculations, to the amount of more than 30 minutes, have been reduced to 1 in 25. The greatest difference between the height of the tide at springs and neaps, observed on the gauge during the year 1835, was between the 17th September and the 14th of May. On the former date the water rose to 48 ft. 10 in.; on the latter to 23 ft. 4 in. The difference between the height of the neap and spring tides, at the dock gates, is from 4 to 5 ft. less than at the gauge, although the intervening distance is but four miles—a fact which very clearly shows that the supposition of the wave maintaining the same level is clearly erroneous. The temperature, prevailing winds, &c., are shown in the annexed tables for the last six years:—

Years.	Extremes of the Barometer.		Maximum and Minimum Temperature.	
	Highest.	Lowest.	Maximum.	Minimum.
1830	30.55	29.84	83° July 29.	15° December 25.
1831	30.56	29.84	82 July 30.	22 January 7.
1832	30.52	29.15	84 August 9.	22 January 1.
1833	30.63	29.88	84 May 23.	22 Jan. 21 and 23.
1834	30.60	28.99	84 { June 3, July 17, and August 12.	25 March 18.
1835	30.58	28.74	84 August 11.	3 December 24.

Years.	Winds.										Weather.			Rain. Inches
	Number of Days.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Var.	Fair.	Rain.	Snow	
1830	33	29	30	30	31	76	88	39	10	145	177	23	...	
1831	36	42	43	31	49	75	67	29	13	178	180	7	33.14	
1832	27	52	29	30	27	80	63	47	11	206	157	8	28.94	
1833	30	55	22	14	34	96	93	37	4	169	184	12	34.10	
1834	27	68	24	18	32	95	64	18	19	202	163	6	30.20	
1835	26	42	32	12	29	95	75	24	29	198	171	6	32.63	

No register of the rain was kept prior to 1831; and the month of March in that year is omitted in consequence of the pluviometer being out of order. The meteorological tables and figures are all taken from the observations of Mr. Jones.

(The materials for this article have been compiled from Parliamentary and other public authorities: from local histories and other publications connected with the affairs of the city; from unprinted MSS. and the records of the country; and principally from original inquiries and observations. In the Reports of the Commissioners for inquiring into Municipal Corporations, the reader will find a very valuable report on Bristol.)

BRISTOL, a county in the state of Rhode Island in the U. S. of America, containing the three townships of Bristol, Warren, and Barrington. Bristol co. occupies the E. portion of the state and joins the co. of the same name in Massachusetts. The pop. in 1810 amounted to 5072; in 1820 to 5637; and in 1830 to 6466.

BRISTOL, a seaport and principal town of the above co., is situated on a pen. called Bristol Neck, at the bottom of Narraganset Bay, and occupies the W. side of the pen. in 41° 40' N. lat. and 71° 12' W. long. It is a pleasant, well-built town; the har. is safe and commodious, and the place has considerable trade; the shipping belonging to this port amounted on the 31st December, 1831, to 9368 tons; the exports consist of agricultural produce drawn from the neighbouring country, the soil of which is very fertile. The town contained in 1830 a pop. of 3052; it has 5 incorporated banks, and the aggregate capitals of which amount to 465,000 dollars.

The general assembly of the state of Rhode Island holds its sittings in the month of January every year, either at Bristol, East Greenwich, or Providence.

Bristol is 15 m. S.S.E. from Providence, the capital of the state, and 50 m. S.S.W. of Boston.

BRISTOL CHANNEL. [SEVERN.]

BRISURE, a term borrowed from the French and applied, in permanent fortification, to any part of a rampart or parapet which deviates from the general direction. Thus, in a front of fortification with retired flanks, the part of the curtain immediately contiguous to each flank, which is traced obliquely to the central part and in the direction of the produced face of the collateral bastion, is called the brisure of the curtain. An example of this kind of brisure is shown at *e.* (fig. 1.) in the article **BASTION**. In field fortification the faces of a star fort and of any indented line of parapet are called brisures.

BRITAIN, GREAT. [GREAT BRITAIN.]

BRITAIN, NEW. [NEW BRITAIN.]

BRITANNIA, the name by which the Island of Great Britain is mentioned by the Latin writers. We propose in the present article to give a brief notice of its antient inhabitants and history, previous to and during the period of the Roman domination.

The earliest inhabitants of Britain, so far as we know, were probably of that great family the main branches of which, distinguished by the designation of Celts, spread themselves so widely over middle and western Europe. The Welsh and Danish traditions indicate a migration from Jutland; and the name of Cymry, given to the immigrant people, has been supposed to indicate their probable identity with the Cimmericians (the *Κιμμεριοι* of Herodotus, and the Cimbri of the Roman historians), who being expelled by the Scythians from their more antient seats N. of the Euxine, traversed Europe in a N.W. direction, and found new settlements near the Baltic and the mouth of the Elbe. These barbarians then reached Britain by the same route which was afterwards traversed by the Saxons and Angles. The Celts crossed over from the neighbouring country of Gaul; and Welsh traditions speak of two colonies, one from the country since known as Gascony, and another from Armorica. At a later period the Belgæ, actuated by martial restlessness or the love of plunder, assailed the S. and E. coasts of the isl., and settled there, driving the Celts into the inland country. These Belgæ were a branch of the great Teutonic family.

Before the arrival of Julius Cæsar in Britain the isl. was but imperfectly known to the more civilized nations of the antient world. The people of Carthage and Massilia (called *Massalia* by the Greeks) or Marseilles, traded for tin with certain isls. called by Herodotus *Κασσιτεριδης* (Cassiterides), 'the Tin Islands;' which are supposed by some to have been the British Isles, or, at least, Cornwall and the Scilly Isles.

The etymology of the word Britain has been much disputed. One of the most plausible is that which derives it from a Celtic word *brith*, or *brit*, 'painted' (Camden); in which name it is supposed there is a reference to the custom of the inhabitants of staining their bodies with a blue colour extracted from woad. Carte says, that the name in the most antient British poets is *Inis* (island) *prydhain*. Whether this form or that of the Roman writers furnishes the best clue to the original form of the native designation is perhaps questionable. The meaning of *prydhain*, if it be anything more than a corrupt form derived from the root *brit*, does not seem to be known. It would be to little purpose to give other etymologies, or to enter further into a matter in which certainty is so little attainable.

Cæsar is the first writer by whom any authentic particulars respecting the isl. are given. Stimulated probably by the desire of military renown, and of the glory of first carrying the Roman arms into Britain, provoked also, as he tells us, by the aid which had been furnished to his enemies in Gaul, especially to the Veneti (the people of Vannes in Bretagne), and other maritime people of western Gaul, he determined upon the invasion of the island. As a preliminary step, he summoned to his camp a number of the merchants who traded to the isl. (who alone of the Gauls had any acquaintance with it), and to them he addressed his inquiries. Their caution, however, or their ignorance, prevented his learning much from them. Failing in this quarter, one of his officers, C. Volusenus, was sent to reconnoitre, but he did not venture to leave his ship and trust himself on shore among the natives. Cæsar, no way deterred by this want of information, collected a fleet, and disposed his forces with a view to the descent.

Before entering upon the history of the Roman invasion,

we shall quote the description which Cæsar gives of Britain in a subsequent part of his Commentaries.

'The inland part of Britain is inhabited by those who according to the existing tradition were the aborigines of the island; the sea-coast by those who, for the sake of plunder or in order to make war, had crossed over from among the Belgæ, and in almost every case retain the names of their native states from which they emigrated to this island, in which they made war and settled, and began to till the land. The population is very great, and the buildings very numerous, closely resembling those of the Gauls: the quantity of cattle is considerable. For money they use copper, or rings of iron of a certain weight.* Tin (*plumbum album*) is produced there in the midland districts; and iron near the sea-coast, but the quantity of this is small; the copper which they use is imported. There is timber of every kind which is found in Gaul except beech and fir. They deem it unlawful to eat the hare, and the hen, and the goose; these animals however they breed for amusement. The country has a more temperate climate than Gaul, the cold being less intense.

'The island is of a triangular form, one side of the triangle being opposite Gaul. One of the angles of this side, which is in Cantium (Kent), to which nearly all vessels from Gaul come, looks towards the rising sun; the lowest angle looks towards the S. This side extends about 500 m. The next side looks towards Spain and the setting sun. On this side is Hibernia (Ireland), considered to be about half the size of Britain; but the passage across is of the same length as from Gaul into Britain. Midway in this passage is an island which is called Mona (Man); many smaller islands also are thought to lie in the passage, concerning which islands some have written that about the winter solstice they have night for thirty days together. We could not ascertain anything upon this point by inquiry; but we found, by using certain measures of water, that the nights were shorter than on the continent. The length of this side, according to the opinion of the natives, is about 700 m. The third side fronts the N.; there is no land opposite to this, but one angle of it extends very much in the direction of Germany: this side is thought to be 800 m. in length. So that the whole island is 2000 m. in circuit. †

'Of all the natives, those who inhabit Cantium (Kent), a district the whole of which is near the coast, are by far the most civilized; and do not differ much in their customs from the Gauls. The inland people, for the most part, do not sow corn, but live on milk and flesh, and have their clothing of skins. All the Britons however stain themselves with woad (*se vitro inficiunt*), which makes them of a blue tinge, and gives them a more fearful appearance in battle: they also wear their hair long, and shave every part of the body except the head and the upper lip. Every ten or twelve of them have their wives in common, especially brothers with brothers, and parents with children; but if any children are born, they are accounted the children of those by whom first each virgin was espoused.' (Lib. v. c. 12, 14.)

As to the religion of the Britons, Druidism flourished among them in all its vigour. Indeed this singular superstition was considered by the Gauls to have originated in Britain. A late writer observes that it is not without Oriental features. 'So much subserviency,' he says, 'of one part of a nation to another, in an age so destitute of the means of influence and of the habits of obedience, is not without resemblance to that system of antient Asia which confined men to hereditary occupations, and consequently vested in the sacerdotal caste a power founded in the exclusive possession of knowledge.' (Sir J. Mackintosh, *Hist. of Eng.*, vol. i. p. 9.) It is however to be observed, that the great feature of the Oriental system of caste—the hereditary descent of its occupations and privileges, is wanting in Druidism, as we learn from Cæsar in the passage which we are about to quote. Nor do we think that either the influence which the superior knowledge and the priestly office of the Druids gave them, or the jealousy with which they guarded that knowledge from popular diffusion, can

* The copies here vary very much. We have followed the text of Oudendorp, as edited by Oberlin. Lipsiæ, 1805.

† This is a literal rendering of Cæsar's expression '*inferior*,' the meaning of which it is rather difficult to fix. He elsewhere states that the 'lower' part of the island was the more westerly (Lib. iv. c. 22)—*inferiorem partem insule quæ est propius solis occasum*.

‡ The Roman mile was about twelve-thirteenths of the English. It is scarcely necessary to observe that Cæsar's description of the island is erroneous in several respects.

be regarded as the mark of orientalism; the first being the natural result of man's reverence for superior intelligence, and for every thing connected with his religion, and the second the manifestation of that selfishness the seeds of which are sown in every human heart. We subjoin here Cæsar's account of the Druids:—

'They are the ministers of sacred things; they have the charge of sacrifices, both public and private; they give directions for the ordinances of religious worship (*religiosa interpretantur*). A great number of young men resort to them for the purpose of instruction in their system, and they are held in the highest reverence. For it is they who determine most disputes, whether of the affairs of the state or of individuals: and if any crime has been committed, if a man has been slain, if there is a contest concerning an inheritance or the boundaries of their lands, it is the Druids who settle the matter: they fix rewards and punishments: if any one, whether in an individual or public capacity, refuses to abide by their sentence, they forbid him to come to the sacrifices. This punishment is among them very severe; those on whom this interdiction is laid are accounted among the unholy and accursed; all fly from them, and shun their approach and their conversation, lest they should be injured by their very touch; they are placed out of the pale of the law, and excluded from all offices of honor.

'Over all these Druids one presides, to whom they pay the highest regard of any among them. Upon his death, if there is any of the other Druids of superior worth, he succeeds; if there are more than one who have equal claims, a successor is appointed by the votes of the Druids; and the contest is sometimes decided by force of arms. These Druids hold a meeting at a certain time of the year in a consecrated spot in the country of the Carnutes (people of the neighbourhood of Chartres), which country is considered to be in the centre of all Gaul. Hither assemble all from every part, who have a litigation, and submit themselves to their determination and sentence. The system of Druidism is thought to have been formed in Britain, and from thence carried over into Gaul; and now those who wish to be accurately versed in it, for the most part, go thither (to Britain) in order to become acquainted with it.

'The Druids do not commonly engage in war, neither do they pay taxes like the rest of the community; they enjoy an exemption from military service, and freedom from all other public burdens. Induced by these advantages, many come of their own accord to be trained up among them, others are sent by their parents and connexions. They are said in this course of instruction to learn by heart a number of verses; and some accordingly remain ten or twelve years under tuition. Nor do the Druids think it right to commit their instructions to writing, although in most other things, in the accounts of the state and of individuals, Greek characters are used. They appear to me to have adopted this course for two reasons; because they do not wish either that the knowledge of their system should be diffused among the people at large, or that their paying attention to written characters, should become less careful about cultivating the memory; because in most cases, when happens that men, from the security which written characters afford, become careless in acquiring and retaining knowledge. It is especially the object of the Druids to incur this—that souls do not perish, but after death pass into other bodies; and they consider that by this belief more than any thing else men may be led to cast away the fear of death, and to become courageous. They discuss more than many points concerning the heavenly bodies and their motion, the extent of the universe and the world, the nature of things, the influence and ability of the immortal gods, and they instruct the youth in these things.

'The whole nation of the Gauls is much addicted to religious observances, and, on that account, those who are attacked by any of the more serious diseases, and those who are involved in the dangers of warfare, either offer human sacrifices or make a vow that they will offer them, and they employ the Druids to officiate at these sacrifices: for they consider that the favour of the immortal gods cannot be conciliated, unless the life of one man be offered up for that of another; they have also sacrifices of the same kind appointed on behalf of the state. Some have images of enormous size, the limbs of which they make of wood, work, and fill with living men, and setting them on fire, the men are destroyed by the flames. They consider that the torture of those who have been taken in the war

mission of theft or open robbery, or in any crime, is more agreeable to the immortal gods; but when there is not a sufficient number of criminals, they scruple not to inflict this torture on the innocent.

'The chief deity whom they worship is Mercury; of him they have many images, and they consider him to be the inventor of all arts, their guide in all their journeys, and that he has the greatest influence in the pursuit of wealth and the affairs of commerce. Next to him they worship Apollo and Mars, and Jupiter and Minerva; and nearly resemble other nations in their views respecting these, as that Apollo wards off diseases, that Minerva communicates the rudiments of manufactures and manual arts, that Jupiter is the ruler of the celestials, that Mars is the god of war. To Mars, when they have determined to engage in a pitched battle, they commonly devote whatever spoil they may take in the war. After the contest, they slay all living creatures that are found among the spoil; the other things they gather into one spot. In many states, heaps raised of these things in consecrated places may be seen: nor does it often happen that any one is so unscrupulous as to conceal at home any part of the spoil, or to take it away when deposited; a very heavy punishment with torture is denounced against that crime.

'All the Gauls declare that they are descended from Father Dis (or Pluto), and this they say has been handed down by the Druids: for this reason, they distinguish all spaces of time not by the number of days, but of nights: they so regulate their birth-days, and the beginning of the months and years, that the day shall come after the night.' (Cæsar de Bell. Gall., lib. vi. 13, 14, 16, 17, 18.)

Although in what relates to or is closely connected with the system of the Druids, we have quoted that part of Cæsar's Commentaries which has relation to Gaul, we have thought ourselves authorized in applying his description to Britain, by his declaration that the system existed in its greatest vigour in that island. Of the account which he gives of the civil institutions of the Gauls we do not feel ourselves completely justified in making a similar application, although it is likely that, in their political and social arrangements, a considerable similarity existed between the two countries, the Gauls being however more advanced in civilization.

In the autumn of the year 55 B.C., Cæsar, embarking with the infantry of two legions (about 8000 to 10,000 men) at the Portus Itius, (Witsand, between Calais and Boulogne,) arrived with part of his fleet, after a passage of about 10 hours, on the coast of Britain, and beheld the steep cliffs which skirted the shore covered with armed natives ready to dispute his landing. Judging this to be an unsuitable spot for his purpose, after a delay of several hours to enable the rest of his fleet to come up, he proceeded about seven miles farther, and prepared to disembark on the open and level beach which presented itself to him. The place at which Cæsar first touched was probably near the south Foreland, and he landed somewhere on the flat shore which extends from Walmer castle towards Sandwich.* He did not make good his landing without a severe struggle. The success of the invaders, however hardly earned, and though somewhat incomplete, disposed the natives to submission; but the dispersion in a storm of some vessels, which were bringing over the Roman cavalry, and the damage sustained by the fleet which had conveyed Cæsar, induced them to renew the contest, and to attempt, first, the surprise of one of the legions which had been sent out to forage, and next the attack of the Roman army. They were again beaten, and compelled to sue for peace; and Cæsar, anxious to return, contented himself with requiring an increased number of hostages, whom he commanded to be brought to him on the Continent, for which he immediately embarked. Two of the British States sent their hostages: the rest did not.

Early next year (54 B.C.), Cæsar, embarking again at the Portus Itius, invaded the island with a much larger force. His fleet consisted of 800 vessels of all classes, including some which belonged to private individuals; and the natives, who had assembled to oppose his landing, terrified at the magnitude of his armament, retired in alarm from the coast. He landed in the same place as on the

former occasion; and setting out about midnight in pursuit of the natives, found them drawn up on the bank of a river, (probably the Stour, near Canterbury,) to oppose his further progress. His cavalry drove them into the woods in the rear of their position, and one of his legions (the 7th) stormed a strong hold, formed of timber, which had been formerly constructed probably in some domestic war. This strong hold is supposed by Horsley to have been subsequently the Roman station of Durovernum, now Canterbury. Intelligence that his fleet had been damaged by a storm obliged Cæsar to recal his troops from the pursuit of the enemy, and his own return to the coast to ascertain the extent of the damage and take measures for repairing it, delayed his operations for some days. Upon his return to his former post he found that the natives had augmented their forces from all parts, and had entrusted the command in chief to Cassivellaunus, (we use Cæsar's mode of writing the name, perhaps the native form of it was Cass-wallaun or Caswallon,) a prince whose territories were divided from the maritime states by the River Tamesis or Thames, at a part which was 80 Roman, or about 74 English, miles from the Kentish coast. This prince had been engaged previously in incessant wars with his neighbours; but the common danger compelled them to forego their disputes, and it is likely that his talents for war pointed him out as the most suitable person for general. But neither his caution and skill, nor the undaunted valour, nor the increased number of the Britons, enabled them to withstand the superior discipline and equipment of the Romans. After some severe but unsuccessful struggles, Cassivellaunus dismissed the greater part of his forces, detaining about 4000 charioteers, whose skill in the management of their chariots rendered them very formidable, and retired, as it appears, into his own dominions across the Thames. That river was fordable only in one place in the line of Cæsar's advance; and the natives had planted stakes, sharpened at the point, on the bank and in the bed of the river. All obstacles were however overcome; Cæsar, crossing the river, put the enemy to flight, received the submission of several tribes, and took by storm the town of Cassivellaunus. These disasters, combined with the entire defeat of the princes of Cantium (Kent) in an attack upon the maritime camp which the Romans had formed to protect their fleet, induced Cassivellaunus to submit. The conqueror demanded hostages, fixed a tribute to be paid by the subject Britons, and returned to Gaul with all his forces and a number of captives.

It will be well here to notice the geography and ethnography of Britain, so far as the expedition of Cæsar brings it into view. As to the place where he crossed the Thames, there has been some dispute. Camden fixes it at Coway or Cowey stakes, near Chertsey in Surrey, and Mr. Gale, in the 'Archæologia' (vol. i. p. 183), adduces several strong arguments in support of Camden's opinion. In fact the stakes are described as they remained fixed in the time of the writer. To evidence so strong Mr. Horsley's opinion that Cæsar crossed just above Kingston must give place. The town of Cassivellaunus is supposed to have been Verulamium (Verulam) near St. Alban's.

The tribes with whom the Romans in this expedition became acquainted were as follows: we give also their names as written by Ptolemy, where they have been identified or where identity is conjectured by antiquarians. The positions are those laid down or suggested in the map published by the Society for the Diffusion of Useful Knowledge, 'Antient Britain, part 1, with the exception of the Cassi, as to which tribe we give Camden's conjecture:—

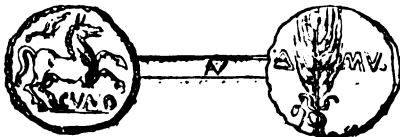
Cæsar.	Ptolemy.	Inhabitants of
People of Cantium.	Καντιοι	Kent.
Trinobantes.	Τρινοβαντες	Essex.
Cenimagni	Σιμενοι? Iceni of Tacitus?	Norfolk, Suffolk, Cambridge.
Segontiaci	not mentioned	parts of Hants and Berks.
Analites	Αρπεβαριοι?	parts of Berks and Wilts.
Bibroci	not mentioned.	parts of Berks and adjacent counties.
Cassi . . . . .	. . . . .	Cassio Hundred, Herts?

Of what tribe Cassivellaunus was originally the head it is difficult to say. The Trinobantes, Cenimagni, Segontiaci,

* Some contend for Romney marsh or the neighbourhood of Hythe. The question is whether Cæsar's *ab eo loco progressus* is to be understood of an advance towards the north or towards the south-west. Mr. Horsley (*Britannia Romana*) shows it must have been towards the north

Ancadites, Bibroci and Cassi submitted to Cæsar before the final defeat of the British princes, the situation of whose capital they pointed out to the Romans. This prevents the supposition of his being by birth the ruler of any of them; yet if the Roman Verulamium was on the site of his town, this must have been in the territory of the Cassi, according to Camden's opinion of their situation. If we might offer a conjecture it would be this: that Cassivellaunus was prince of the people called Catyeuchlani (Κατυευχλωνοι) by Ptolemy, and Cautellani, Καυτελλανοι by Dion, who are given in the Society's and other maps, as occupying the whole or part of Herts, Bucks, Bedfordshire, and Northamptonshire; that the original district of this people was much less than has just been stated, but that they had subjected to their sway the Trinobantes, the Cenimagni, and the other tribes, (except perhaps the people of Cantium,) mentioned by Cæsar; that the defeat of Cassivellaunus induced these tribes to revolt; but that, upon the departure of the Romans, they were again reduced to subjection, and, with the exception of the Trinobantes and Cenimagni, so completely subdued as to have lost their distinctive appellations, and to have been therefore included by Ptolemy under the name and in the description of the conquering tribe. The fact that Cæsar does not mention the Catyeuchlani, nor Ptolemy the subjected tribes, unless under different names, is favourable to this conjecture. The Trinobantes, whose independence Cæsar took pains to secure, appear in Ptolemy under their own name: they seem not only to have retained their independence, but rose, probably in consequence of their alliance with Rome, and their greater advance in civilization, to the position of a leading state.

The success of Cæsar was certainly not such as to induce him to attempt the permanent reduction of the island; and from some passages in ancient authors it has been conjectured that his success was not so great as he has represented it. However that may be, the Romans did not return to the island until the reign of Claudius, leaving the Britons alone for about a century, or going no farther than to threaten an attack. In the interval those of the Britons who dwelt in the parts nearest to Gaul appear to have made some progress in civilization. They coined money, and many British coins have been discovered, of which about forty (Note to Gough's *Camden*) belong to a prince, Cunobelin (so on his coins, Cynobellinus in Suetonius, Κυνοβαλλινος in Dion Cassius), whose residence was at Camulodunum (either Colchester or Maldon), and whom we should therefore take to be king of the Trinobantes, the people of that part of the country. It is likely that a connexion was maintained after Cæsar's departure between the Romans and the Trinobantes, who would desire to enjoy the protection of the Roman name and influence (as did the Ædui and Remi in Gaul), while the Romans would be willing to keep up an alliance in the island, which might be of use to them whenever they were disposed and able to resume their schemes of conquest. The money of Cunobelin is supposed to have been the work of a Roman artist, or of some Gaul familiar with Roman customs. The subjoined engraving is from a coin, one of several of Cunobelin, in the British Museum.



[Medal of Cunobelin. Actual size. Gold. Weight 89½ grains.]

But however the Trinobantes may have been pleased with the support of their Roman friends while they could retain their own independence, at the same time they were by no means willing to surrender this whenever the ambition of those friends chose to demand it. We consequently find them taking the lead in opposition to the invading force sent by the Emperor Claudius, while the Catyeuchlani (whom we have conjectured to be the people of Cassivellaunus) took either no part or at least not a prominent one, and this not from want of power, for we find from Dion that the Boduni (Βοδουνοι) or Dobuni of Gloucestershire were subject to them. Perhaps the Catelluani were of Celtic race, and the Trinobantes of Belgic origin; and this circumstance, together with their rivalry in other respects, prevented their combining for the general good in a cordial manner. Aulus Plautius, a senator of prætorian rank, com-

manded the forces which were designed for the attack on the island (A. D. 43). The Romans were instigated by a British fugitive whom Dion calls Βερεκος (Berikos). The Roman soldiers were at first unwilling to leave their quarters in Gaul to engage in an expedition beyond the boundaries of the world, but were prevailed on to embark. The Britons did not resist their landing, and were subsequently defeated in two battles, in the first of which they were commanded by Cataractus (Καταράκτος Dion), in the second by Togodumnus (Τογδομνος, Dion), the sons of the now deceased Cunobelin. The success of the Romans disheartened some of the natives, and part of the Boduni (Βοδουνοι) probably the Dobuni (Δοβουνοι) of Ptolemy, who dwelt in and about Gloucestershire, submitted. From the country of these new subjects Plautius advanced to a river (supposed to some to be the Severn), thought by the Britons to be impassable without a bridge; and sending over a troop of Gallie auxiliaries, and after them his lieutenants, the brothers Flavius Vespasian (afterwards emperor) and Sabinus made considerable slaughter. The attack was not however decisive, for the battle was renewed the next day; and it was not until after a hard struggle that the Britons yielded. From this part of the country the vanquished natives retreated eastward to the marshes near the mouth of the Thames (Ταμίσα, Dion) (the marshes of Essex), where another stand was made with great slaughter and various success. In this struggle Togodumnus appears to have fallen; and the Britons, roused by the desire of vengeance to greater efforts, exerted themselves so vigorously that Plautius (as we gather from Dion) withdrew to the mouth of the Thames to await the arrival of the Emperor Claudius, whose presence he solicited. Claudius embarked with reinforcements, including some elephants; and landing at Messilia, proceeded through Gaul to Britain. Upon his arrival he crossed the Thames with his army, defeated the natives who had assembled to oppose him, took Camulodunum or Camulodunum (Καμουλοδουνον, Dion), the capital of Cunobelin, and forced numbers of the Britons to submit either at discretion or upon terms. After this success Claudius disarmed the vanquished tribes and returned to Rome, leaving Plautius to secure and enlarge the Roman conquests. (Dion Cass. *Hist. Rom.*) The senate decreed triumphal honours to the emperor, and the memory of his victory has been perpetuated in his coinage. An ancient inscription ascribes to him the addition of the Orcades to the Roman empire. The coin of which we give an engraving is one of those commemorating his British conquests.



[Coin of Claudius. Actual size. Gold. Weight 129 grains. In Brit. Mus.]

The success of Plautius obtained for him that kind of triumph called an ovation; but whether this was for any great exploits performed by him after the departure of Claudius we are not informed. (Dion, as above; Suetonius.) Some time during his command, his lieutenant Vespasian conquered the Isle of Wight, and had considerable success probably against the tribes of the south coast. Upon the departure of Plautius, those Britons who were struggling for independence overran the lands of such as had submitted themselves with or submitted to the Romans; and P. Ostorius Scapula, who succeeded Plautius (A. D. 50) as prætor, on his arrival found affairs in the greatest confusion. He immediately collected forces, routed and pursued the invaders, and prepared to restrain their incursions by stations or camps at the rivers Sabrina (Severn) and Antona or Aufona (Nene).

The line which Ostorius thus proposed to defend comprehended within it all the southern and south-eastern parts of the island, including nations who for the most part were of Belgic origin, and who had either submitted with reluctance to the Roman sway, or had been subdued by Plautius and Vespasian, or had willingly embraced the Roman alliance. This part of the island was inhabited by

^e Suetonius (Claudius, c. 17) says Claudius received the submission of the part of Britain without a battle and without bloodshed (sine ulla pugna sanguine). In his life of Vespasian however he says that he (Vespasian) performed several exploits partly while commanding under Claudius (partim Claudii ipsius ductu, c. 4).

the tribes mentioned by Cæsar and given in a foregoing table; by the Iceni and Atrebatii, who are supposed by many to be mentioned by Cæsar under the names of Cenimagni and Anelaites; by the Catuellani or Catyuchlani, whom we have conjectured to be the native tribe of Cassivellaunus; by the Debuti; and by the following people not yet noticed:—

Dumnonii or Dumnonii (*Itin. Anton.*) Δουμνονιοι (Ptol.), people of Devonshire and Cornwall.

Durotriges, Δουροτριγες (Ptol.), people in and about Dorsetshire.

Belgae, Βελγαι (Ptol.), people of Somersetshire, Wilts, and Hants. The name of their capital, Venta (*Osmra*, Ptol.) is preserved in Winchester.

Regni (Ρηγνοι, Ptol.), people of Surrey and Sussex.

Of these tribes the Iceni had never been subdued: they had allied themselves with the Romans willingly, but they saw that, if Ostorius severed the island into two parts by a line of military posts, the independence of all within that line would be sacrificed. They consequently opposed his plan, roused their neighbours (probably the Trinobantes and Catuellani) to the contest, and fortified themselves in a strong position. The active Ostorius immediately marched against them, stormed their camp in spite of an obstinate resistance, and decided by this success the conduct of those tribes who were hesitating between peace and war. He then marched against the Cangi, a people whose position has been so variously placed that it seems vain to offer any further conjectures. What seems to have created much difficulty is a supposition that they were connected with the Iceni as neighbours, perhaps as subjects. It does not appear to us that this supposition is countenanced by Tacitus. That historian tells us that 'the defeat of the Iceni having quieted those who were hesitating between war and peace, (by which we understand the tribes south and east of the line proposed by Ostorius,) the army was led against the Cangi, whom we presume to have been to the north-west of that line or without it, and somewhere near the Irish sea, to which Ostorius had nearly reached, when he was recalled to the east coast by a rising among the Brigantes (*Βριγαντες*, Ptol.), the people of Yorkshire and Lancashire. Having quelled these, he prepared to march against the Silures or Silyres (*Σιλυρες*, Ptol.), a people of South Wales, whom Tacitus (*Agric.* xi.) supposes (apparently without any good reason), from their dark complexions, curled locks, and western locality, to have been of Iberian origin, and whose resistance to the Romans was more obstinate than that of any other people of South Britain. That no apprehension of a rising in his rear might impede his progress he settled a colony of veterans at Camalodunum to repress the Iceni and other neighbouring tribes, and to insure the conquered to the yoke of the Romans.

Although the name of Caractacus, or, according to the orthography of Tacitus, Caractacus, has not been mentioned since the notice of Plantius's first campaign, that valiant prince appears to have kept the field. The extent of country over which that campaign extended indicates that the authority which he held was not confined to the Trinobantes, of which nation we have supposed him to be the hereditary prince: he was probably, with his brother, at the head of a league similar to that formed under Cassivellaunus to resist Julius Cæsar. Upon the subjugation of his own tribe he had probably found willing soldiers among other tribes; many actions with the Romans, some successful, some doubtful—and in so unequal a contest to avoid defeat was as glorious as victory—had raised his name high among the Britons, and given it celebrity even in Rome itself; and his presence among them as their commander added to the native confidence of the Silures. (*Tacit. Ann.* xii. 33, 36.) The seat of war was transferred into the country of the Ordovices (*Ορδοβυγες*, Ptol.), people of N. Wales and Shropshire, by Caractacus, whose army was reinforced by such as feared the Roman yoke, and who now determined to make a decisive stand against the Romans. He posted his forces upon a steep ascent, and fortified the approaches by a rampart of loose stones; a river which afforded no sure footing to those who would pass it ran in front of his strong position, and his best troops took their station in front of the ramparts. He animated his men by his exhortations, declaring that 'on that day and that contest it depended whether they should recover their freedom or have to bow under an eternal yoke; and reminded them of their

ancestors who had repelled the dictator Cæsar, secured themselves from the punishments and burdens of the Romans, and preserved undefiled the persons of their wives and children. The Britons responded to the exhortations of their commander. But their native valour was unavailing against the arms and discipline of their enemies. Their position was stormed; the victory was complete; the wife and daughter of Caractacus were taken; his brothers surrendered themselves; and the gallant prince himself was put in chains by Cartimandua, queen of the Brigantes, with whom he had taken refuge, and delivered up to the Romans. His unbroken spirit and noble demeanour when at Rome before Claudius commanded the admiration of that prince: he was spared the death which the cruel policy of Rome too commonly inflicted on captured princes, and the emperor pardoned him for opposing an attack as unjust as it was irresistible. (*Tacit. Annales.*) His subsequent history is unknown. His defeat and capture probably took place A.D. 51:

The insignia of a triumph were decreed to Ostorius; but his successes ended with the defeat of Caractacus. An officer left with some cohorts to fortify a permanent station among the Silures was slain, and his men nearly cut off; and shortly after the Roman foragers were attacked, and with the troops sent to their aid routed; and it was only by bringing up his legions that Ostorius could check the flight, and restore the fortune of his arms. The Romans were harassed after this with repeated skirmishes, and the obstinate resistance of the Silures was stimulated by a declaration of Claudius 'that their very name must be blotted out.' A victory over a body of auxiliaries, and the liberal distribution of the spoil and captives, enabled them to draw the other natives into the struggle, and Ostorius died worn out with care (perhaps A.D. 53.); the Silures exulting at his death, and declaring that 'though he fell not in battle, yet it was the war which brought him to the grave.'

Didius, the successor of Ostorius, found the Roman affairs in a very depressed condition. An entire legion had been defeated by the Silures, who spread their incursions on every side until restrained by the approach of the new commander. Venutius, a Brigantian, had married the queen Cartimandua, the betrayer of Caractacus. Matrimonial disputes, in which the Romans interfered, brought on a war with this chieftain, who, after the capture of Caractacus, was the most eminent commander of the Britons. Didius does not appear to have gained any signal advantage. His command lasted into the reign of Nero, the successor of Claudius, probably till A.D. 57.

Veranius, the successor of Didius, lived only a year after undertaking the command, and did little in that interval; but his successor, Paulinus Suetonius, obtained more distinction. The Roman arms had triumphed under Corbulo in Armenia, and Suetonius was anxious to gain in the W. a name equal to that which Corbulo was acquiring in the E. He attacked the island of Mona (now Anglesey), transporting his infantry over the straits which divide that island from the main land (the Menai) in flat-bottomed boats, the cavalry fording the passage, or in the deeper parts swimming. The description of this attack, as highly characteristic of the people of the island, we give in the words of Tacitus. (*Annales*, l. xiv. c. 30.)

'On the shore stood a line of very diversified appearance; there were armed men in dense array, and women running amid them like furies, who, in gloomy attire, and with loose hair hanging down, carried torches before them. Around were Druids, who, pouring forth curses and lifting up their hands to heaven, struck terror by the novelty of the appearance into the hearts of the soldiers, who, as if they had lost the use of their limbs, exposed themselves motionless to the stroke of the enemy. At last, moved by the exhortations of their leader, and stimulating one another to despise a band of women and frantic priests, they make their onset, overthrow their opponents and involve them in the flames which they had themselves kindled. A garrison was afterwards placed among the vanquished; and the groves consecrated to their cruel superstitions were cut down. For they held it right to smear their altars with the blood of their captives, and to consult the will of the gods by the quivering of human flesh.'

From the shores of the extreme W. Suetonius was recalled by the news of a great rising of the natives under Boadicea, in that part of the isl. which had been already subdued by the Romans, [BOADICEA.]

The revolt of Boadicea had nearly extinguished the Roman dominion in Britain, but at last the natives were completely defeated in a battle, the scene of which is supposed to have been just to the N. of London. Battle-bridge, St. Pancras, is thought to have preserved in its name a memorial of this dreadful day. (Nelson's *Hist. of Islington*.) The Roman general ravaged with fire and sword the territories of all those native tribes which had wavered in their attachment to the Romans, as well as those who had joined in the revolt: but even hunger did not induce them to submit. The chief civil or rather fiscal officer of the Romans quarrelled with Suetonius, and though the latter retained the command for a time longer, he was at last recalled without finishing the war (A.D. 62), and Petronius Turpilianus appointed his successor. Under the milder treatment of the new general, the revolt seems to have subsided.

Several generals were successively sent to the island; but the Romans made little progress until the time of Vespasian, A.D. 70-78, in whose reign Petilius Cerealis subdued the Brigantes, who, under Venutius, had renewed hostilities; and Julius Frontinus subdued the Silures. But the glory of completing the conquest of South Britain was reserved for Cn. Julius Agricola, whose actions are recorded by his son-in-law the historian Tacitus. [AGRICOLA.]

From the time of Agricola, the later years of whose government were during the reign of Domitian, we read little about Britain in the Roman historians until the reign of Hadrian (A.D. 85 to 120), who visited the island, which had been much disturbed. The conquests which Agricola made in Caledonia seem to have been speedily lost, and the emperor fenced in the Roman territory by a rampart of turf, 80 Roman, or about 74 English, m. long. This rampart extended from the Estuary Iuna, (*Ἰούνα εὐχώρας*, Ptol.) Solway Frith to the German Ocean, a little south of the more solid wall afterwards built by the Emperor Severus. (Ælius Spartian, *Life of Hadrian*.) In the subsequent reign of Antoninus Pius (A.D. 138 to 161), Roman enterprise seems to have revived a little. Lollius Urbicus, his lieutenant in Britain, drove back the barbarians, and recovered the country as far as Agricola's line of stations between the Forth and Clyde. [ANTONINUS, WALL OF.]



[Medal of Antoninus Pius. Actual size. Brass. Weight 454 grains. In Brit. Mus.]

In the following reign of M. Aurelius Antoninus (A.D. 161 to 180) we have some notice of wars in Britain, which Calpurnius Agricola was sent to quell. (Capitolinus, *Life of Aurelius Antonin.*) The Caledonians probably broke through the wall of Antoninus in the reign of Commodus, son of Aurelius, if not during the reign of Aurelius himself. Commodus sent against them his lieutenant, Ulpus Marcellus, an able leader, who defeated the Caledonians with heavy loss. A great mutiny among the legions in Britain occurred during the reign of Commodus, which was with difficulty quelled by Pertinax (afterwards emperor), one of the successors of Marcellus in the government of the island. Pertinax was probably succeeded as governor by Clodius Albinus. (Horsley.)

The contest of this Clodius Albinus with Severus for the empire belongs rather to the history of Rome generally than to that of Britain in particular. The contest was ended by the fall of Albinus at the battle of Lugdunum (Lyon) in France, very near the close of the second century. It is not unlikely that Clodius had in a great measure drained the province of its troops in order to strengthen his own army against Severus, and that the northern natives took the opportunity of renewing hostilities, breaking into the Roman province, and spreading desolation far and near. Induced by the unfavourable tenor of the intelligence from the island, Severus, though now growing aged and infirm,

resolved to undertake the conduct of the war in person, and accordingly crossed over into the island A.D. 206 or 207. The natives, terrified at his approach, would have submitted, but Severus dismissed their ambassadors, and continued his military preparations. Advancing beyond the limits of the province (now probably bounded by Hadrian's rampart), he advanced through a difficult country, where he had endless fatigues to sustain. There were morasses to drain, or causeways to form across them, forests to cut through, mountains to level, and bridges to build: and so much were the Roman soldiers worn out by these works, that the emperor lost, says Xiphilin, 50,000 men. The natives do not appear to have come to a pitched battle, so that the campaign was not marked by any brilliant exploits. Two people, the *Mœates* (*Mauras*), who dwell nearest to the Roman wall, and the Caledonians, who were more remote, were the great objects of the emperor's hostility. These tribes appear to have been at the lowest stage of civilization, as much so as their southern brethren at the time of Cæsar's first invasion. They wore little clothing, and painted or otherwise marked upon their bodies the figures of divers animals: a small target or shield, a spear, a poniard, and, as we learn from Tacitus, a cumbersome unpointed sword, composed their offensive and defensive arms. They had neither walls nor towns, but lived in tents, a pastoral race, feeding upon milk and wild fruits, and the flesh of such animals as they took by hunting. The community in women, noticed by Cæsar, appears to have existed among them. (Herodian and Xiphilin, quoted by Horsley, *Brit. Rom.*)

It was during this war that Severus ordered the erection of the famous wall which stretches across the island, from the Solway to near the mouth of the Tyne. The length of this wall, owing to the corruption of the text of ancient authors, is given with great diversity. It is probable that the true reading in each of them was LXXXII. or LXXXV. which is rather more than the length assigned to Hadrian's rampart of turf, which was near this wall, and extended in the same direction. Remains of both these great works exist, and though we have not room for a very full description, yet some account of them cannot be considered as misplaced.

It appears that three great Roman works have crossed the island at this part. The first is supposed by Horsley, and after him by Warburton (*Vallum Romanum*, 4to. Lond. 1753), to have been simply a line of forts or stations, and perhaps a military way between them. This line of stations is by the above writers ascribed to Agricola; conjecture guiding them, we believe, rather than testimony. The extent of the works of Agricola is however disputed. Hutton ascribes to him an agger or mound, with a double ditch, and a second agger or rampart outside the northern ditch. Without attempting to settle this dispute, it may be observed that the works thus ascribed partly to Agricola and partly to Hadrian have throughout a parallel direction, from which some have contended that they were formed by the same person. The rampart of Severus, which is of stone, is for the most part, but not invariably, parallel to that of Hadrian; it lies to the N. of it, and extends rather farther at each end. It is accompanied throughout, as the following extract will show, by a military road, or indeed by several military roads. We take the following description of them from Hutton, as conveying the best information as to the works themselves, without affirming the correctness of his statement as to their authors:—

'There were four different works in this grand barrier, performed by three personages, and at different periods. I will measure them from S. to N., describe them distinctly, and appropriate each part to its proprietor; for although every part is dreadfully mutilated, yet by selecting the best of each we easily form a whole; and from what is, we can nearly tell what was. We must take our dimensions from the original surface of the ground.

'Let us suppose a ditch, like that at the foot of a quickset hedge, 3 or 4 ft. deep, and as wide; a bank rising from a 10 ft. high, and 30 wide in the base; this, with the ditch will give us a rise of 13 ft. at least. The other side of the bank sinks into a ditch 10 ft. deep and 15 wide, which gives the N. side of this bank a declivity of 20 feet. A small part of the soil thrown out on the N. side of this 15 ft. ditch forms a bank 3 ft. high and 6 wide, which gives an elevation from the bottom of the ditch of 13 feet. Thus our two ditches and two mounds, sufficient to keep out every rogu

but he who was determined not to be kept out, were the work of Agricola.

'The works of Hadrian invariably join those of Agricola. They always correspond together as beautiful parallel lines. Close to the N. side of the little bank I last described, Hadrian sunk a ditch, 24 ft. wide, and 12 below the surface of the ground, which, added to Agricola's 3 ft. bank, forms a declivity of 15 ft. on the S., and on the N. 12. Then follows a plain of level ground 24 yards over, and a bank exactly the same as Agricola's, 10 ft. high, and 30 in the base; and then he finishes, as his predecessor began, with a small ditch of 3 or 4 feet.

'Severus's works run nearly parallel with the other two; lie on the N., and never far distant; but may be said always to keep them in view, running a course that best suited the judgment of the maker. The nearest distance is about 20 yards, and greatest near a mile, the medium 40 or 50 yards.

'They consist of a stone wall 8 ft. thick, 12 high, and 4 the battlements; with a ditch to the N. as near as convenient, 36 ft. wide and 15 deep. To the wall were added, at unequal distances, a number of stations or cities, said to be 18, which is not perfectly true; 81 castles, and 330 castlets or turrets, which I believe is true, all joining the wall*.

'Exclusive of this wall and ditch, these stations, castles, and turrets, Severus constructed a variety of roads, yet called *Roman Roads*, 24 ft. wide, and 18 in. high in the centre, which led from turret to turret, from one castle to another, and still larger and more distant roads from the wall, which led from one station to another, besides the grand military way before mentioned (now the main road from Newcastle to Carlisle), which covered all the works, and no doubt was first formed by Agricola, improved by Hadrian, and, after lying dormant fifteen hundred years, was made complete in 1752. I saw many of these smaller roads, all overgrown with turf; and when on the side of a hill, they are supported on the lower side with edging stones.' (*History of the Roman Wall*, pp. 136-140.)

The vigorous proceedings of Severus had induced the natives to sue for peace; but upon the return of the emperor to South Britain they resumed hostilities. He prepared forthwith to enter their country, and resolved upon their extermination, but died probably at Eboracum (York), A.D. 210 or 211. He appears to have carried his arms far into Scotland, and probably fixed the boundary of the empire at the rampart of Antoninus, though his erection of a wall so near to the rampart of Hadrian indicates that he thought the intermediate territory either of little value or of uncertain tenure. His son Caracalla, soon after his death, surrendered a great part of this territory when he made peace with the Caledonians, and probably retained only a few stations beyond the wall which his father had built.

From this period many years elapsed, and many emperors reigned, without the occurrence of any event of importance in Britain. In the reign of Diocletian and Maximian, Carausius, a Menapian (the Menapians were a people of the Netherlands), who commanded the Roman fleet in the North Sea against the Frankish and Saxon pirates, seized Britain and assumed the purple (about A.D. 288); and such was his activity and power, that the emperors consented to recognise him as their partner in the empire. He was however after some years killed by Allectus, one of his friends (A.D. 297), and three years afterwards (A.D. 300) Britain was recovered for the emperors by Asclepiodotus, captain of the guards. Upon the resignation of Diocletian and Maximian (A.D. 304), Britain was included in the dominions of Constantius Chlorus, one of their successors. This prince died in Britain at Eboracum, A.D. 307, after having undertaken with some success an expedition against the Caledonians. His son Constantine the Great also carried on some hostilities with the same people and the Mœatæ. The northern tribes now began to be known by the names of Picts and Scots.

The Roman power was now fast decaying, and the provinces were no longer secure against the irruptions of the savage tribes that pressed upon the long line of their frontier. Britain, situated at one extremity of the empire, suffered dreadfully. The northern tribes, Picts, Scots, and Attacotti burst in from the north, and the Saxons infested the coast. In the reign of Valentinian, probably in the year

367, Theodosius (father of the emperor of that name), being sent over as governor, found the northern people plundering Augusta (London), so that the whole province must have been overrun by them. He drove them out, recovered the provincial towns and forts, re-established the Roman power, and gave the name of Valentia either to the district between the walls of Antoninus and Severus (Richard of Cirencester, Roy), or, as Horsley thinks, to a part of the province south of the wall of Severus.

When Gratian and Valentinian II. associated Theodosius (son of the above) with them in the empire, Maximus, a Spaniard, who had served with great distinction in Britain, took umbrage at the preference shown to another, and raised in the island the standard of revolt, A.D. 381. Levying a considerable force, he proceeded over to the continent, defeated Gratian, whom he ordered to be put to death, and maintained himself for some time in the possession of his usurped authority. He was however at last overcome by Theodosius, and the province returned to its subjection to the empire. The Britons who had followed Maximus into the continent received from him possessions in Armorica, where they laid the foundation of a state which still retains their language and their name. [BRETAGNE.]

Silicho, whose name is one of the most eminent in the degenerate age in which he lived, served in Britain with success, if we may trust the panegyric verses of Claudian; but the time and particulars of his service are not known. Perhaps it was about A.D. 403. The unhappy province after his departure was again attacked by barbarians, and agitated by the licentiousness of the Roman soldiery, who successively set up three claimants to the imperial throne,—Marcus, Gratian, and Constantine. The first and second were soon dethroned and destroyed by the very power which had raised them. Constantine was for a time more fortunate. Raising a force among the youth of the island he passed over into Gaul (A.D. 409), acquired possession of that province and of Spain, and fixed the seat of his government at Arles, where he was soon after besieged, taken, and killed. His expedition served to exhaust Britain of its natural defenders: the distresses of the empire rendered the withdrawal of the Roman troops necessary, and near the middle of the 5th century, or, according to some, about A.D. 420, nearly 500 years after the first invasion by Julius Cæsar, the island was finally abandoned by them.

Having thus traced the progress and decline of the Roman power, it now only remains for us to give an account of the subdivision, government, and general state of Britain while a prov. of the Roman Empire.

The first Roman governors were the proprætors, officers chiefly or entirely military; nor are there, so far as we know, any records or traces of a subdivision of Britain till a comparatively later period of the Roman dominion. The extensive and important changes introduced into the Roman government by Diocletian (who seems to have thrown off much of that disguise with which names and institutions of republican origin had invested the imperial despotism of his predecessors) affected Britain. The whole empire was divided into four great prefectures, and Britain was included in the prefecture of Gaul.

Our authority for the administration of Britain is the *Notitia Imperii*, a record of late date, probably as late as the time of the Romans quitting the island. From the 'Notitia' we learn that the government of the island was intrusted to an officer called *Vicarius*, which Horsley, not inaptly, translates vice-gerent. Under him there were five governors (for civil purposes we presume), two *Consulares* (men of consular rank) for the two provinces of Maxima Cæsariensis and Valentia, and three *Præsides* (presidents) for the provinces of Britannia Prima, Britannia Secunda (First and Second Britain), and Flavia Cæsariensis. Three other principal officers are mentioned,—the *Comes littoris Saxonici per Britanniam* (Count of the Saxon shore in Britain), the *Comes Britanniarum* (Count of Britain), and the *Dux Britanniarum* (Duke of Britain)*. The first and third of these officers were evidently military; and the title of the first, together with the posts occupied by the troops under his command †, indicates that his duty was to oppose those piratical descents which, after the departure of the Romans,

* We have translated the words *Comes* and *Dux* by *Count* and *Duke*, after Horsley: the modern titles are obviously derived from the more ancient; but there is this difference, that while the modern names now indicate only rank and title, the ancient names were attached to offices.

† These are all on the S.E. coast, extending from Portsmouth to Brancaster in Norfolk.

* General Roy, *M. H. Antiq. of the Rom. in Britain*, gives the length of the wall of Severus at 68½ English or 75 Roman miles.

proved so fatal to the island. The *Dux Britanniarum* had the charge of the Wall of Severus and the command of the N. district of the island with its garrisons and military posts. We are inclined to think the *Comes Britanniarum* was also a military officer, and that he had charge of the W. and S. districts, which, as being less exposed to hostilities, were bare of troops.

The situation of the five prov. of Britain, according to Richard of Cirencester (a monk of the 14th century, whose work was discovered and published at Copenhagen about the middle of the last century, and whose authority, though disputed by some, is apparently trustworthy), was as follows. We give them in a tabular form, with the nations which occupied each.

BRITANNIA PRIMA, the country S. of the Thames, and the Bristol Channel, including the territories of the

These nations are mentioned by Richard of Cirencester; their situation has been already given, except that of the Hedui, who are supposed to have been inhabitants of Somersetshire and perhaps a part of Gloucestershire. *Aquæ Solis* or Bath seems to have been in their territory. Richard places the *Bibroci*, whom he seems to confound with the *Regni* (or, as he terms them, the *Rhemi*), in Surrey and East Sussex. He says the *Durotriges* were sometimes called *Morini*. He also calls the *Atrebatii*, *Attrebates*.

Regni } Not mentioned by Richard, unless the first
Ancalites } are the same as the *Rhemi* or *Bibroci*, and the second as the *Attrebates*.

Cimbri } People, as it seems, of Devonshire and Corn-
Cornubii } wall, mentioned by Richard, not by Ptolemy.

BRITANNIA SECUNDA, the country separated from the rest of Britain by the Sabrina or Severn and Deva or Dee: *i. e.*, Wales, Herefordshire Monmouthshire, and parts of Salop, of the counties of Gloucester and Worcester; including the territories of the

Silures, people of that part of South Wales bordering on England and of those parts of England between South Wales and the Severn.

Ordovices, people of that part of North Wales bordering on England.

Dimecia or } People of the W. part of South Wales, coun-
Δημητριάδων } ties of Pembroke, Caermarthen, Cardigan.

Cangiani } People of Caernarvonshire, supposed by
or } some to be the *Cangi*, attacked by *Ostorius*
Καγκάωνων } (see above).

FLAVIA CÆSARIENSIS, the territory N. of the Thames, E. of the Severn, and probably S. of the Mersey, the Don which joins the Yorkshire Ouse, and the Humber; comprehending the territory of the

Carnabii } People of Cheshire, part of Shropshire, and
Καρναβίωνων } some adjacent districts.

Richard of Cirencester considers the *Cassii* and the *Catyeuchiani* to be the same people: we do not agree with him. The same writer considers that the *Cassii* and *Dobuni* made up the kingdom or rather the republic of the *Cassii*. The situation of these tribes has been given already.

People of the counties of Lincoln, Nottingham, Leicester, and the adjacent parts. These people seem to be regarded by Richard as a subdivision of the *Iceni*. The *Iceni*, properly so called, he gives as the other subdivision, calling them *Cenomanni*.

MAXIMA CÆSARIENSIS, the country from the Mersey and the Humber to the Wall of Severus, comprehending the territory of the

Brigantes, mentioned already.

Parisii } People of the East Riding of Yorkshire.
Παρισίωνων }

Two nations confederate together, according to Richard, not mentioned by Ptolemy; they inhabited Lancashire or part of it.

VALENTIA or **VALENTIANA**, the country between the Wall of Severus and the rampart of Antoninus, including the S.

part of Scotland, the county of Northumberland, and part of Cumberland, comprehending the territories of the

Ottadini } The inhabitants of the E. coast of Northum-
Οττάδινων } berland and the adjacent coast of Scotland.

Gadani } These people dwelt to the W. of the *Ottadini*:
Γαδανώνων } in Northumberland, in Roxburgh, Selkirk, Peebles, and Lanark-shires.

Selgovæ } The inhabitants of Dumfries and part of
Σελγοβώνων } Kirkcudbright-shires.

Novantæ } The inhabitants of Wigtonshire.
Νοβαντωνώνων }

The inhabitants of that part of Scotland S. of the Wall of Antoninus not occupied by the above-mentioned nations. They seem to have occupied a considerable tract N. of the wall, which, being cut off from the rest of their territories, was wasted by the Caledonians.

The remaining part of the island was never long in the power of the Romans. Agricola overran part of it: he established some stations; and probably other commands after him brought it into temporary subjection. The part which Agricola thus subdued is termed by Richard

VESPASIANA, including the country between the rampart of Antoninus and a line drawn from the *Muray F.* (Varar estuary*, Ptolemy) to the mouth of the *Clyde*, and comprehending the territories of the

Horestii, mentioned by Tacitus but not by Ptolemy, and likely they occupied the portion of the territory of the *Damnii* which lay beyond the wall: they were S.W. of the Tay.

The difference between Richard and Ptolemy with respect to this people makes us uncertain whether we are to assign them to Fishshire or Angus.

Inhabitants of the coast of Aberdeen: their chief town, *Devana* (Δηβαννα), was probably Old Aberdeen.

The range of the Grampians towards N.E.; Banff, Moray or Murray, Nairn, and part of Inverness-shires.

Damnii Albani, not mentioned by Ptolemy: parts of Perth, Argyle, Stirling, and Dumbarton-shires. General R. considers *Albani* to mean mountaineers. [Atrebatii] Perhaps they are comprehended by Ptolemy among the *Damnii* (Δαμνίωνων) of Valentia.

Atacotti, not mentioned by Ptolemy but by *Ammianus Marcellinus*. They have been noticed in the course of the preceding historical sketch. They inhabited, according to Richard, the country on the bank of the *Clyde* and of the great lake *Lyncaidior*, supposed to be *Loch Lomond*.

Richard supposes that this province of **VALENTIA** was at the time of the later emperors, called **TRUAS**: to the rest of Scotland he gives the name of

CALEDONIA, comprehending the territories of the following people:—

Caledonii, properly so called, } N.W. of the Murray Frith and Loch Ness.
Καλεδόνωνων } The immense Caledonian Forest covered the territory or rather skirted it to the N.W. Ptolemy seems to make them extend in S.W. direction as far as Loch Fyne; assigning to them parts of Inverness, Perth, and Argyle-shires.

Inhabitants of parts of Ross and Cromarty-shires.

These two nations seem to have inhabited the E. coast of Sutherland and Caithness-shires. The name of the *Logi* is preserved in that of the modern parish of *Loch Rannoch*.

Logi } intimates that the *Carnabii* were a part of the people so called in South Britain.

Carnabii } abandoned their country, in conjunction with the *Cantii*, upon the Roman conquest: they settled here. If there be any truth in the account we may perhaps identify the *Cantii* with these wandering *Cantii*.

* Varar, as it is correctly written in the Latin edition of Pausanias, Pirkheymer. The name Varar still exists in South Fife, the upper part of the Murray Frith.

† A comparison of the situation of the *Carnabii* at the commencement of the

Catini } Part of Caithness and Sutherland-shires W. of the Carnabli. If we follow Richard's orthography, perhaps a relic of the name Cat-ini may be preserved in Caith-ness.

Mertia } W. of the Loth in Sutherlandshire.
Mirta }

Carunnaea } The W. coast of Sutherland and Cromarty-shires.
Keprounasa }

Cerones } These two people (if two there were, for we are inclined to think some confusion of transcribers has led one name to be variously written, and hence it has been supposed there were two people whose really was only one) dwelt along the W. coast of Scotland, between Loch Broom and the Linthe Loch.
Kepouves }
Creones }
Kpewves }

Epidii } The peninsula of Cantire and the adjacent part of Argyleshire between the Linthe Loch and Loch Fyne. Richard, in his map, gives the names of Epidia Superior and Inferior to Jura and Islay respectively.
Epidioi }

Horsley gives an arrangement of the provinces entirely different from the above, except so far as regards Britannia Secunda. He makes Britannia Prima to extend from the coast of Sussex to the banks of the Nene, and assigns the western counties to Flavia Caesariensis. He places Valentia within the wall of Severus, and Maxima Caesariensis beyond it.

Our chief authorities in the above table have been Richard of Cirencester and Ptolemy: in the Latin names we have commonly followed the spelling of the former; the Greek names we have subjoined from Ptolemy, as far as he furnishes them, except where they have been given before in the course of the history. The locality of the several nations may be seen in the maps of Antient Britain (N. and S.), published by the Society for the Diffusion of Useful Knowledge.

Although the Roman conquest does not appear to have led to such high cultivation of the intellect as in some other provinces, and Roman Britain can produce no literary name, while Gaul, and especially Spain, can boast of several; yet great improvements resulted from their dominion. They carried roads across the island in various directions, as appears from the Itinerary of Antoninus, and from existing remains; dug canals, raised embankments against the sea and the high tides in the great estuaries; and there arose under their dominion many towns, some of considerable importance, and endowed with the various gradations of privileges indicated by the titles of *Municipia*, *Coloniae*, *Civitates Latii jure donatae*, and *Stipendiariae*.

There were, according to Richard of Cirencester, two municipia or towns whose inhabitants enjoyed most of the privileges of Roman citizens.

Verulamium (*Uorolavion*), near St. Alban's.
Eboracum (*Eborakon*), now York, quarters of the sixth legion, and apparently the residence of the Roman emperors when in Britain.

The *Coloniae* were settlements of Roman citizens, and served to diffuse the language, religion, and arts, and to secure the supremacy of Rome. According to Richard, there were in Britain nine colonies, viz.

Londinium (*Λονδινιον*) or *Augusta*, now London, mentioned by Tacitus as a place of great trade, though not spoken of in his time as a colony.

Camulodunum (*Καμουλοδουνον*), *Geminae Martiae*, now Colchester or Maldon?

Rhutupis (or *Rutupae*, Itin. Anton. 'Ρουτουπια), now Richboro', near Sandwich.

Thermae or *Aquae Solis* (*Υδατα Αερρα*), now Bath.

Isca or *Secunda*, now Caerleon.

Deva or *Getica* (*Δηοννα*), now Chester, quarters of the 20th legion.

Glevum or *Claudia*, now Gloucester.

Lindum (*Λινδον*), now Lincoln.

Camboricum, now Cambridge (or Icklingham, in Suffolc. Horsley).

Isaid in Cornwall and Caithness will perhaps incline us to account for the similarity of their designation by a reference to its etymology rather than to such a connexion of the people as Richard supposes. The Celtic root *cora* or *cora* (see Camden) appears in many other languages with the signification of an extremity or a horn; compare the Hebrew קרן, the Latin *cornu*, our own words *corn-er*, *corn-wall*, &c. By a reference to the presumed etymology of the names *Cad-ii* and *Gant-ii*, we can account for their similarity also: the root *cant* (compare *Gant-ii* and *Cant-ii* above with the antique *Cant-abri* and the modern *Cant-ire*, see Camden) is supposed to mean in Celtic, a corner.

There were ten cities *Latii jure donati*; the inhabitants of these possessed privileges, but not equal to the foregoing. *Durnomagus* (*Durobriva*, Itin. Ant.?), now Caistor on Nene or Water Newton.

Catarracton (*Catarracto* or *Catarractonum*, Itin. Ant. *Καροϋπακτοριον*), now Catterick, in Yorkshire.

Cambodunum (*Καμουλοδουνον*?), now Slaek, in Yorkshire, near the border of Lancashire.

Coccium (supposed by some to be the 'Ερυδουρον of Ptol.), now Ribchester, Lancashire.

Lugubalia (*Luguvallium*, Itin. Ant.), now Carlisle.

Pteroton (*Πτεροτον στρατοπεδον*, the flying camp), now Burgh-head, Morayshire, Scotland.

Victoria (*Ουικτορια*), now Dealgin Ross, Perthshire.

Theodosia, now Dumbarton.

Corinium (*Durocornovium*, Itin. Anton. *Κορνιον*), now Cirencester.

Sorbidunum, now Old Sarum.

There were twelve towns called *Stipendiariae*, with whose municipal constitution and privileges we are not acquainted.

Venta Silurum, now Caer-went or Caer-gwent, Monmouthshire.

Venta Belgarum (*Ουενρα*), now Winchester, Hants.

Venta Icenorum (*Ουενρα*), now Caister, near Norwich.

Segontium, now Caer-Seiont, near Caernarvon.

Muridunum, now Seaton, near Colyton, Devon.

Ragæ (*Ratae*, Itin. Anton. 'Ραγε), now Leicester.

Cantiopolis or *Durovernum* (*Δαρουερον*), now Canterbury.

Durinum (*Durnovaria*? Itin. Anton. *Δουρινον*?), Dorchester.

Isca (*Ioka*), now Exeter.

Bremenium (*Βρεμενιον*), now Riechester, Northumberland.

Vindomum (*Vindomis*, Itin. Anton.), near Andover, Hants, a very doubtful position.

Durobriva, now Rochester.

In the above list we have given the orthography of Richard, noting any variation between him and the Itinerary of Antoninus. The Greek names as usual are from Ptolemy. The list of *Municipia* and *Coloniae*, it should be added, is by no means complete.

Though we do not possess such materials as enable us to form a connected history of the Roman settlement and administration of Britain, yet from the scanty fragments of its history during this period, and our more exact knowledge of the state of Spain, France, and other countries under Roman dominion, we are enabled to make some general conclusions which cannot involve any serious error.

As to the population of the island we must conceive that it received a very considerable mixture of Roman and foreign blood. Comparatively few women would be brought by the Roman soldiers; and such of them as settled permanently, or even remained for a few years, would doubtless have children by native women. It was the policy of the Romans to employ the native troops of one prov. in the conquest or military administration of other provs.; a contrivance obviously devised with the view of preventing revolt. [ARMY, p. 377.] Accordingly we find among the Roman monuments of Britain abundant evidence of the presence in this island of soldiers from France, Belgium, and other parts of the continent; from which circumstance there necessarily resulted a great intermixture of foreign and native blood. Many Romans would receive grants of land in the island, which in fact is implied by the very nature of a *Colonia*; and the numerous remains of Roman villas that have been discovered, prove that many of the settlers possessed considerable wealth and taste for the ornamental arts. The Roman language would be that of administration, and most probably that of judicial proceedings also; and all natives or persons of mixed blood who were allowed to aspire to any civil employment (which in the course of time could hardly have been denied to the natives) must have learned the Roman language and laws. To this period belongs also the first introduction of Christianity [ΑΡΧΗΒΙΣΤΟΡ, vol. ii. p. 269], which necessarily was accompanied with a knowledge of the Greek language. Whether the Greek learning was totally lost during the times that followed the Roman dominion (a fact which we do not believe), or only preserved among a few learned ecclesiastics, it is now well known that its supposed first introduction after the so-called revival of letters is disproved by abundant evidence. The strong walled cities, either founded by the Romans or built on the sites of British towns, such as Cirencester, Silchester, Burgh Castle, Richborough Castle, and others, of which great remains still exist, sufficiently

indicate that the possession of the island was considered insecure without these strong holds, while they show that the formation of large towns, the centres of civilization, was a part of the Roman system. These towns were the stations of the military force required to keep a given district in order, to enforce the payment of taxes, and generally to provide for the defence of the island. Many of these walled towns were evidently built with a view to trade, both foreign and internal; they would form the great markets, and would of course contain the courts of justice. These towns, under the names of *Colonizæ*, *Municipia*, &c., received municipal institutions similar to the towns of Italy, Gaul, and Spain; and thus the Romanized inh. of Britain were probably introduced under their foreign masters to the rudiments of this important branch of political science, the construction and administration of municipalities. It is a point of curious inquiry, not yet, so far as we know, fully discussed, to ascertain how far the Saxons, on their invasion of the island, moulded or adapted their political institutions to those which they must have found existing in Roman Britain. The Saxons, we know, ultimately possessed themselves of all the Roman walled cities, of which they formed their boroughs [see *Borough*]; and it is hardly conceivable that a comparatively small body of invaders would completely overturn all those municipal institutions, which, though less free than their own, would present them, so far as administration was concerned, with useful means for securing and consolidating their acquisitions.

BRITANNICUS, son of the Emperor Claudius, and of his third wife the infamous Messalina, was born on the 11th of February, A.D. 42, on the twentieth day after his father's accession, and was at first named Tiberius Claudius Germanicus, a name which was changed in honour of the subsequent conquests in Britain. [BRITANNIA.] When only six years old, while exhibiting before his father in the mimic fights called *Troja*, during the Circensian games, the wishes of the populace seemed to incline in favour of L. Domitius, the son of Agrippina, who headed the opposite band, and who afterwards succeeded to the imperial dignity under the title of Nero. On the death of Messalina, and the marriage of Claudius with his niece Agrippina, Octavia, sister of Britannicus, who had been betrothed to Silanus, was given in marriage to Lucius Domitius, and pains were taken by the courtiers, who had procured the death of Messalina, to elevate the adopted prince to equal honours with the son whom Claudius had hitherto acknowledged as his heir.



[Capt. Smyth's collection. Medal, with the inscription 'Claudius Britannicus Cæsar.' Copper.]



[Capt. Smyth's collection. Copper.]

At the Circensian games Britannicus appeared in the *prætexta* or youthful dress; Nero in a triumphal robe; and the populace formed their opinion as to the future fortune of each accordingly. When the boys met each other afterwards, Nero saluted his playfellow as *Britannicus*; Britannicus replied to him only by the family name of *Domitius*. Agrippina expressed great indignation at

this affront; and complained to her husband Claudius that his adoption was treated with contempt—that the decrees of the senate and the command of the people were abrogated within the palace walls—and that if a stop were not put to the perverseness of those preceptors by whom Britannicus had been instructed, public disasters must ensue. Claudius, moved by her remonstrances, banished or put to death the excellent tutors who had hitherto brought up his son, and placed him under the care of others recommended by his crafty step-mother.

When the intrigues and the crimes of Agrippina had obtained the imperial dignity for her own son, Britannicus necessarily became an object of suspicion to Nero, whose fears were by no means diminished by the threats in which his mother indulged upon the banishment of her lover Pallas. She took care indeed not to conceal her menaces from her son; and she pronounced Britannicus to be the true stock of the Cæsars, and alone worthy to succeed to his father's empire, while Nero was only adopted into the family of the Cæsars. Little solicitous as to the revelation of her foul deeds, she rejoiced that her own providence and the gods had permitted the survival of her step-son, and she declared that she would accompany him to the camp, and demand from the soldiers his elevation to the throne, without fearing the futile arguments which might be urged against her by the unwarlike soldier Burrhus, or the wordy rhetorician Seneca, the two guardians of Nero's youth.

Britannicus was near the completion of his fourteenth year, and Nero, who was well acquainted with the violence of Agrippina, had recently discovered how much popularity the young prince retained. Among other sports of the *Saturnalia* was one named *Regnum*, in which the players threw dice for the kingship of the evening. Nero, who on one occasion happened to be the successful caster, issued his orders to each of the company to do some inoffensive trifling; but when it came to the turn of Britannicus, Nero commanded him to stand up and sing a song. Britannicus calmly obeyed, and began a song which implied that he had fallen from his patrimony and from sovereignty; lines which the keen-sightedness of the commentators of Ennius have determined to belong to the *Andromache* of that poet. The licence of the season and the time of night made the courtiers less on their guard than usual, and a sentiment of pity was evidently excited among them. This incident, combined with the threats of Agrippina, determined Nero to remove Britannicus by poison, and he employed Locusta (whose name is rendered familiar to us by Juvenal) to assist his purpose.

The poison first administered was ineffectual; but Nero, impatient of delay, threatened Locusta with punishment (and, as Suetonius adds, beat her with his own hand), and she furnished him with a potion which she affirmed should be 'as rapid in deadly effect as the sword itself'; it was prepared by the bedside of the emperor under his own inspection.

According to an old custom, the youths of the imperial family, with other noble children, ate their meals in the presence of their elder relations. Britannicus, when assisting at one of these banquets, was attended as usual by a taster, and some artifice became requisite to prevent any violation of the court fashion, and at the same time to avoid the suspicion which must have been created by the death of both the prince and this officer. An unpoisoned drink, already tasted, was therefore handed to Britannicus, and when he complained that it was too hot, the poison was poured into it with cold water. The moment after he had swallowed the draught, he lost the use of his limbs, his breath, and utterance. All present were in consternation, and some quitted the room; but those who were better acquainted with the habits of the palace sat still and watched the emperor's countenance. With a careless air, he pronounced the prince's disease to be an attack of epilepsy, with which, he said, Britannicus had been afflicted from infancy, and that he would speedily recover. The involuntary terror displayed by Agrippina and Octavia proved their ignorance of the crime: the former was a veteran in dissimulation; the latter, though still of tender years, had been taught to repress all outward signs of grief or of affection. After a short pause, the festivity was renewed.

Britannicus was buried on the very evening of his death: the funeral arrangements, which were but slender, having been provided beforehand. The pile was constructed in the Campus Martius, under a terrific storm of rain.

Suetonius adds to the other causes of hatred which Nero cherished against Britannicus, that he was jealous of the superior excellence of his voice; and that Titus, who was educated by the same tutors, happening to sit next him at the fatal banquet, tasted the poisoned cup, and for a long time felt the consequences. A metoposcopist (a diviner by marks on the forehead), introduced by Narcissus in order to inspect the forehead of the prince, predicted that Britannicus would never mount the throne, which, however, would certainly be ascended by Titus. Titus, after his accession, called to mind this circumstance, and as a testimony to his early friendship for Britannicus, erected a golden statue to his memory on the Palatine hill, and had a second (equestrian) statue carved in ivory, which was exhibited in the Circensian processions. The potion, says Suetonius, medicated by Locusta, was first tried upon a kid, which survived five hours. This process being far too slow to satisfy Nero, a mixture of greater strength was prepared, which killed a pig immediately. The funeral of Britannicus is placed on the day after his death by Suetonius, and Dion (lxi.) records that his face, being discoloured by the poison, was covered with plaster by the order of Nero, but that the torrent of rain which fell during the ceremony washed off the plaster and revealed the crime.

The disastrous history of Britannicus has furnished the ground plan to a tragedy by Racine, which the French consider among the *chefs-d'œuvre* of their drama, but which to our taste abounds in the chief faults of their theatre. Its close adherence to history is greatly vaunted, and it is but justice to admit that it has embodied the principal events related by Tacitus. The confidante Albine may be tolerated on prescription, although she is entirely detached from the plot, and is introduced solely to listen to the complaints of her mistress; but what is to be said in defence of the creation of Junie—the boy and girl love between her and Britannicus—and its interruption by the unworthy passion of Nero? The poet himself informs us that Britannicus was the most elaborate of his tragedies, and that its success by no means answered his expectations. Junie too, he tells us, is Junia Calpurnia, described by Seneca as '*festivissima omnium puellarum*,' who was above the age prescribed for admission to the College of Vestals, and of whom little more is known than that she was alive in the reign of Vespasian.

La Harpe has criticised Britannicus at great length, and in our mind too favourably. Brotier also, in his notes on the 13th book of Tacitus, states that Junie, whom Racine introduced on compulsion through the 'necessity of the theatre,' is the sole drawback to the perfection of his tragedy; her manners, he adds with truth, are far more Parisian than Roman.

(Tacit. *Annal.* xii. xiii; Suetonius, *Nero*; Dion Cass., lxi.)

BRITANY. [BRETAGNE.]

BRITISH AMERICA. The territory comprehended under this name extends from 41° to 78° N. lat., and from 52° to 141° W. long.

The S. boundary of British America is formed by the territory of the U. S. The frontier line is not satisfactorily defined at some points, and has long been a subject of disagreement between the two nations. The E. boundary line as claimed by England under the treaty of 1783 is objected to by the government of the U. S. on the ground that the provisions of that treaty were founded upon the assumption of physical facts which subsequent examination has shown to be erroneous. If the English government is right in its interpretation of the treaty, the S. boundary of its continental provinces is as follows:—

Entering the riv. St. Croix in Passamaquoddy Bay, in 45° 10' N. lat. and 67° 15' W. long., it follows the course of the St. Croix to its source in 45° 48' N. lat.: proceeding thence in a line due N. for 41 m. to Mars Hill, it reaches the high land which separate the rivs. that empty themselves into the St. Lawrence from those which fall into the Atlantic. Taking thence a W. direction, the line proceeds with a somewhat irregular course along those high lands to the N.W. head of the riv. Connecticut, descends that riv. to 45° N. lat., and thence continues W. in a right line until it strikes the St. Lawrence at the vil. of St. Regis, which stands at the W. extremity of Lake St. Francis. The line then proceeds in a S.W. direction through the middle of the St. Lawrence into Lake Ontario, which it divides into two nearly equal portions, leaves Ontario by the riv. Niagara and bisects Lake Erie; passes N. through the riv. Detroit

into and through the lake and riv. St. Clair; enters Lake Huron at its S. point and quits it at its N.W. extremity; runs through 'the Narrows' and to the W. of the isl. of St. Joseph into Lake Superior, which it crosses with a winding course, leaving Isle Royale within the U. S. limits. Quitting Lake Superior by Pigeon River the boundary-line runs N.W. to the N.W. angle of the Lake of the Woods in 49° 0' N. lat., and 94° 25' W. long.; proceeds thence due W. to the highest ridge of the Rocky Mountains, continues S. along that range to 42° 50' N. lat., and then takes a course due W. to the Pacific Ocean.

A very large proportion of the territory to the N. of the line just described has been little explored and is of value only as hunting-ground; the E. portion of the territory in question is in possession of the Hudson's Bay Company, and the W. is known as the N.W. or Indian territory.

The right to the territory lying to the W. of the Rocky Mountains is another point remaining unsettled between the English and American governments. By the third article of the convention between them, signed in October, 1818, it was provided that the country in question should remain 'free and open to the vessels, citizens, and subjects of the two powers for the term of ten years from that time, without affecting thereby the claims which either party might have to any portion of such country.' The term thus limited has long expired, but no approach has hitherto been made to the settlement of the question.

A portion of the N.W. coast of America bordering on the North Pacific Ocean is claimed by Russia. This portion extends from 51° N. lat. to the shores of the Arctic Sea, and from 140° W. long to the North Pacific Ocean.

The settled provinces of North America belonging to Great Britain are Lower Canada, lying between 44° and 50° N. lat. and between 64° and 76° W. long.; Upper Canada, 41° and 49° do. and 74° and 85° do.; New Brunswick, 45° and 48° do. and 64° and 68° do.; Nova Scotia and Cape Breton, 43° and 47° do. and 60° and 67° do.; Prince Edward's Island, 46° and 47° do. and 62° and 65° do.; Newfoundland, 46° and 52° do. and 52° and 60° do. [CANADA, UPPER and LOWER; NEW BRUNSWICK; NOVA SCOTIA; CAPE BRETON; PRINCE EDWARD'S ISLAND; NEWFOUNDLAND; NORTH-WEST TERRITORY; HUDSON'S BAY.]

BRITISH CHANNEL. [ENGLISH CHANNEL.]

BRITISH MUSEUM. Till the middle of the 16th century the project of establishing a national Museum had never been entertained in England. It was suggested by the will of Sir Hans Sloane, who, during a long period of eminent practice in physic, had accumulated, in addition to a numerous library of books and MSS., a large collection of objects of natural history and works of art; these he directed should be offered, after his death, which took place in 1753, to the British Parliament for the sum of 20,000*l.*, the collection having cost him 50,000*l.* The offer was accepted, and before the end of the year an Act passed which ordered the payment of the required sum, and vested the property of the museum in trustees for the use of the public. Competent judges had long been solicitous that Sir Hans Sloane's museum should be preserved entire, and he was himself consulted, before his death, as to several of the persons who were afterwards named trustees.

But the attention of the Legislature was not confined to the museum of Sir Hans Sloane. The Act of Parliament of the 26th Geo. II., which directed the purchase of his museum, also directed the purchase of the Harleian collection of MSS., and enacted that the Cottonian library of MSS., which had been given to the government for public uses by an Act of the 12th and 13th of William III., should, with the library of Major Arthur Edwards attached to it, form a part of the general collection.

These several collections were ordered to be kept in their then respective places of deposit, till a more convenient repository, more durable and more safe from fire, and nearer to the chief places of public resort, could be provided for the reception of the whole.

To defray the expenses of these purchases, to procure a fit repository for their preservation, and to provide a fund for the permanent support of the establishment when formed, the Act directed that 100,000*l.* should be raised, by way of lottery, the net produce of which, together with the several collections, was to be vested in an incorporated body of persons, selected from the first characters in the kingdom for rank, station, and literary attainments, upon whom it conferred ample powers for the disposal, preserva-

tion, and management of the institution, which it was determined should bear the name of the **BRITISH MUSEUM**.

The sum really raised under this Act, partly in consequence of benefit arising from unsold tickets, amounted to 101,952*l.* 7*s.* 6*d.*; but the expenses of the lottery amounted to 6200*l.*, and the cashier of the Bank was paid more than 550*l.* for the management of it, so that the net produce was no more than 95,194*l.* 8*s.* 2*d.* Out of this sum 90,000*l.* were paid to the executors of Sir Hans Sloane; 10,000*l.* to the Earl and Countess of Oxford, for the Harleian MSS.; 10,250*l.* to Lord Halifax, for Montague House, and 18,873*l.* for its repairs, which had been estimated in 1764, by three surveyors, at no more than 3800*l.*; 30,000*l.* were set apart as a fund for the payment of future salaries, taxes, and other expenses; some loss was sustained by the difference of price between the times of buying and selling stock; and 4660*l.* were expended for furniture peculiar to the museum. The surplus went to the gradual liquidation of numerous and general expenses, including the removal of the different collections.

The only buildings offered as general repositories at this time were Buckingham House, with the gardens and field, for 30,000*l.*; and Montague House for 10,000*l.* The consideration of the former was waved, partly from the greatness of the sum demanded for it, and partly from the inconvenience of the situation. The latter was finally fixed upon and the agreement for it made in the spring of 1754. No offer of ground for building a repository was made, except in Old Palace Yard, where it was at one time proposed that the museum should find a place in the general plan which had been then recently designed by Kent for new Houses of Parliament.

Montague House was first built about 1674, by Ralph Montague, Esq., afterwards Baron Montague of Boughton, and Duke of Montague; in the manner of a French palace. It was erected from the design of Robert Hooke, the celebrated mathematician, so much employed in the rebuilding of London after the great fire. Foreign artists were chiefly engaged in its completion by the Duke of Montague's desire, and amongst them Signor Verrio, for the decorations; when finished, it was considered the most magnificent and complete building, for a private residence, then known in London. But, on the 19th January, 1686, owing to the negligence of a servant, this house was burnt to the ground. The large income of Lord Montague was again placed in requisition for the re-construction of his palace, and, though executed by fresh artists, the plan was the same, the new structure being raised upon the foundations and burnt walls of the old one.

The second architect employed was Peter Puget, a native of Marseilles, who was assisted in the decorations by Charles de la Fosse, Jaques Rousseau, and John Baptiste Monoyer, three artists of great eminence. La Fosse painted the ceilings, Rousseau the landscapes and architecture, and Monoyer the flowers. Rousseau also assisted as clerk of the works to the building*.

This second building was purchased for the general Repository. The Harleian collection of MSS. was removed to it in 1755; followed, in 1756, by the other collections; and the whole having been properly distributed and arranged, the Museum was opened for study and public inspection, January 15th, 1759.

At this time the contents of the Museum were divided into three departments, viz.: *Printed Books, Manuscripts, and Natural History.*

The *Department of Printed Books* consisted, at first, of the libraries of Sir Hans Sloane and Major Edwards only. In 1757, King George II., by instrument under the Great Seal, added the library which had been collected by the Kings of England, as far as printed books were concerned, from the time of King Henry VII.: rich in the prevailing literature of different periods, and including, among others, the libraries of Archbishop Cranmer, of Henry Prince of Wales, and of Isaac Casaubon. His Majesty annexed to his gift the privilege which the royal library had acquired in the reign of Anne, of being supplied with a copy of every publication entered at Stationers' Hall.

This department was further enriched, in 1763, by a donation from King George III. of a collection of pam-

The exclusive employment of French artists in the new house gave rise to popular but improbable tale, that Montague House was rebuilt at the expense of Louis XIV., to whose court Lord Montague had twice been sent as ambassador.

phlets and periodical papers published in England, between 1640 and 1660, chiefly illustrative of the civil wars of the time of Charles I. and collected by order of that Monarch.

It is impossible to enumerate in detail all the additions which have been since made by gift or purchase. Dr. Thomas Birch's library; two collections of books on musical science from Sir John Hawkins, and one from Dr. Charles Burney; Garrick's collection of old English plays; numerous classics from the library of Thomas Tyrwhitt, Esq., with his MS. notes; Sir William Musgrave's unrivalled collection of biography; a collection of classics, enriched by Dr. Bentley's MS. notes; a library of ceremonials, processions, and heraldry, from Mrs. Sophia Sarah Banks; and a collection of Italian history and topography, from Sir Richard Colt Hoare; are among the smaller acquisitions: the valuable library of the Rev. Clayton Mordaunt Cracherode; the law library of Francis Hargrave, Esq.; the library of science which belonged to the Baron de Moll of Munich; the libraries of Mons. Ginguéné, author of the '*Histoire Littéraire d'Italie*;' and of the Rev. Dr. Charles Burney; and Sir Joseph Banks's library of natural history, are among the larger. Four separate collections of tracts, illustrating the Revolutionary History of France, have been purchased at different times by the trustees: one was the collection formed by the last president of the parliament of Brittany; the commencement of the revolution; two others extended generally through the revolutionary period; the fourth was a collection of tracts and papers published during the hundred days of 1815: the whole forming a library of revolutionary history as complete for France as the tracts already mentioned of the time of Charles I. are for the civil wars of England. Another, and an unrivalled feature of the museum library is its progressive collection of newspapers, from the first in 1586. Sir Hans Sloane had formed a great collection for his day. To these, in 1818, were added the Burney collection, purchased at the estimated value of 1000*l.* Since this time the commissioners of stamps have continued periodically to forward to the Museum copies of all newspapers deposited by the publishers in their office.

In 1823 the library of King George III. was presented by his successor to the British nation, and by Parliament ordered to be added to the library of the British Museum; but for ever to be kept separate from the other books. This library contains selections of the rarest and more especially of works of the first ages of the art of printing: it is rich in early editions of the classics, in books from the press of Caxton, in the history of the States of Europe in the languages of the respective countries, in the Transactions of Academies, and in a grand geographical collection. Its formation was commenced at the time when the libraries of the Jesuits were undergoing suppression, and their libraries sold through Europe; it was still further enriched from the secularized convents of Germany. It was led to more than half a century by an expenditure of little more than 200,000*l.*, and is in itself, perhaps, the most complete library of its extent that was ever formed.

The aggregate of the collections here enumerated, augmented yearly by gifts, by claims under the Copyright Act, and by grants of money from Parliament, have now placed the department of printed books in the British Museum upon a range with the greatest libraries of Continental Europe; near 2000*l.* is now expended annually in the purchase of old and foreign publications.

Department of Manuscripts. The Harleian, Sloanean, and Cottonian MSS. formed the nucleus of this department at the establishment of the Museum; followed, in 1757, by the MSS. of the ancient royal library of England. In this last collection, which contains whatever had been brought together by our kings, from King Richard II. to King George II., are numerous valuable MSS.: among them the '*Codex Alexandrinus*,' in four quarto volumes, written upon fine vellum, probably the most ancient MS. of the Greek Bible now extant, in uncial characters, supposed to have been written between the fourth and sixth centuries. It was presented from Cyril, the patriarch of Constantinople, to King Charles I. Many of these MSS. came into the royal collection at the time when our monastic institutions were destroyed, and some still retain the anathemas upon the spare leaves which the donors denounced against those who should alienate the respective volumes from the places of their original deposit. Old scholastic divinity abounds in this collection, and it possesses innumerable volumes enriched by the finest illuminators of different countries, at a

succession of periods to the 16th century. Here also are preserved a numerous assemblage of the domestic music-books of Henry VIII.; and the Basilicon Doron of King James I., in his own hand-writing. The Cottonian collection is especially rich in historical documents, from the time of the Saxons to King James I.; it likewise contains numerous fine and important registers of English monasteries; the charters of King Edgar and King Henry I. to Hyde Abbey, near Winchester, written in gold letters; and the MS. called the 'Durham Book,' a copy of the Latin Gospels, with an interlinear Saxon gloss, written about the year 800, illuminated in the most splendid and elaborate style of the Anglo-Saxons, and believed once to have belonged to the Venerable Bede. This collection is also singularly rich in royal and other original letters, and comprises the correspondence of most of the greatest personages not only of this country but throughout Europe, from the earliest period in which letters were written to the seventeenth century. The Harleian collection is still more miscellaneous, though historical literature in all its branches forms one of its chief features. It possesses two very early copies of the Latin Gospels, written in gold letters. It is particularly rich in heraldic and genealogical MSS., in the Visitations of counties, and in topographical collections for almost every part of England; in parliamentary and law proceedings; in originals, copies, and calendars of ancient records; and abbey registers; in MSS. of the classics, among which is one of the earliest known of the *Odyssey* of Homer; in missals, Antiphonars, and other service-books of the Romish church; and in old English poetry. It likewise contains a large number of splendidly illuminated MSS., and an extensive mass of correspondence.

The Sicanean collection principally consists of MSS. on natural history, voyages and travels, upon the arts, and especially upon medicine. It comprises the chief of the celebrated Kœmpfer's MSS., with the voluminous medical collections of Sir Theodora Mayerne, and amongst them the annals of his practice in the court of England from 1611 to 1649. It also contains a collection of medical and other scientific correspondence, with numerous MSS. on history, poetry, and miscellaneous subjects. Some of the drawings of animals belonging to this collection are among the richest and most accurate of any period. Two volumes upon vellum are from the pencil of Madame Merian: one relates entirely to the insects of Surinam.

The collection of MSS., formed by the first marquis of Lansdowne, was added to these libraries in 1807, having been purchased by Parliament for 4923*l.* It consists in part of the Burghley and Cæsar papers, supplementary to the Cottonian collection; in a very large assemblage of bishop Kennet's MSS., and in numerous collections of an historical kind. Among the single volumes which may be enumerated, is a MS. of Hardyng's *Chronicle*, as it was presented by its author to King Henry VI., a French version of the Sacred Scriptures, upon vellum, translated by Raoul de Presle at the command of Charles V. of France (a MS. of great rarity even in that country); five volumes of Saxon homilies, transcribed by Mr. Elstob and his sister; and a fac-simile of the Vatican Virgil, made by Bartoli in 1642. To these may be added, besides a native map, near 200 drawings, in the first style of Eastern art, of the interior, natural history, dresses, and customs of China.

Another large collection of MSS., almost exclusively in the faculty of law, was purchased in 1813, of the representatives of Francis Hargrave, Esq. Among these, besides numerous copies of early reports, is an abridgment of Equity, by Sir Thomas Sewell, Master of the Rolls, in 45 volumes.

The collection of MSS., chiefly of the Greek and Latin classics, which had been formed at a vast expense by the Rev. Dr. Charles Burney, was purchased in 1818. Among these is the Townley Homer, a MS. of the *Iliad*, similar to that of the *Odyssey* in the Harleian collection, purchased at the price of 600 guineas; two early MSS. of the Greek rhetoricians; a volume of Pappus's mathematical tracts; and a magnificent Greek MS. of Ptolemy's geography, adorned with maps, of the 15th century.

Two Oriental collections also have been added: one made by Claudius James Rich, Esq., while consul at Bagdad, and purchased by parliament in 1825, contains, among other MSS. of a rarer kind, several of the Syriac version of the Scriptures, of great antiquity: the other, a collection made

in various countries of the East by Joseph Fowler Hull, Esq., consisting chiefly of Arabic and Persian MSS., was by him bequeathed to the Museum in 1827.

In 1829 a small but valuable collection of MSS., in part relating to French history, and partly of a literary character, was bequeathed by the reverend Francis Henry Earl of Bridgewater, accompanied by a small real estate, and the sum of 7000*l.* to be invested, and the interest applied in the future purchase of MSS.

The last distinct collection is that of the Howard Arundel MSS., acquired partly by exchange and partly by purchase from the Royal Society in 1831, at an estimated value of 3559*l.* 3*s.*: it consists of more than 500 volumes, and contains many MSS. of unusual interest in almost every branch of learning; it is singularly rich in materials for the history of our own country and language.

The ancient Rolls and Charters of the Museum, many thousands in number, partly belonging to the Cottonian, Harleian, and Sloane collections, and partly accumulated additions, chiefly illustrative of English History, monastic and other property, form another division of the Department of MSS., with a distinct Catalogue.

These are the larger and separate collections. Among what are called the 'Donation MSS.' there are smaller collections, the gifts or bequests of individuals, or acquired by purchase. Among these may be enumerated Madox's collections for the history of the Exchequer; Rymer's used and unused materials for his *Fœdera*; Dr. Birch's historical and biographical MSS.; the Decisions of the Judges upon claims in the city of London after the fire of 1666; Sir William Musgrave's Obituary; Cole's collections for a history of Cambridge and Cambridgeshire, with his materials for an *Athenæ Cantabrigienses*; various Coptic and other ancient MSS. taken from the French in Egypt in 1799; Ducarel's Abstracts of the Archiepiscopal Registers at Lambeth; a long series of calendars of the Originalia Rolls from 1 Hen. VIII. to 2 James I.; Sir Andrew Mitchell's diplomatic correspondence with every part of Europe during his residence at the court of Frederic the Great of Prussia; Sir William Burrell's and the Rev. William Hayley's joint collections for the history of Sussex; Mrs. S. S. Banks's MSS. on heraldry, processions, and archery; Abbot's drawings and minute descriptions of American insects in 17 volumes, quarto; Welby's collections for Derbyshire; Sir Joseph Banks's foreign correspondence; Besser and Kerich's collections on Gothic architecture and costumes; the Stepney papers; the papers of the Count Joseph de Puissey, chiefly relating to the Chouan war and the French Royalists from 1793 to 1825, in 117 volumes; the Jermyn collections for a history of Suffolk in 41 volumes in folio, presented by Hudson Gurney, Esq.; the materials assembled by Archbishop Cune whilst employed in the compilation of his various historical and other works in 206 volumes; numerous MSS. illustrative of Italian history, selected from the collection of Frederic fifth Earl of Guilford; 310 Rolls, commonly known as the Chancellor's Rolls, being duplicates of the Great Rolls of the Pipe between 9 Hen. II. and 17 James I., presented, in 1835 and 1834, by order of the Commissioners upon the public Records; the topographical collections of Samuel Lysons, Esq. and the Rev. Daniel Lysons, being chiefly materials for the 'Magna Britannia' and 'Environs of London'; 'Egyptian Papyri,' partly purchased at Salt's and other sales, and partly presented by J. G. Wilkinson, Esq.; a very extensive collection of ancient Irish MSS., including one or two copies of the 'Brehon Laws'; and a selection made, at an expense of more than 3000*l.*, from the MSS. lately possessed by Richard Heber, Esq.

Department of Natural History.—Sir Hans Sloane's collection was very considerable for the time: it consisted of quadrupeds and their parts; birds and their parts, eggs, and nests; amphibia, crustacea, shells, echini, entrochi, insects, corals, sponges, zoophytes, stones, ores, bitumens, salts, and an extensive herbarium.

To this department also, in the infancy of the museum, all miscellaneous artificial curiosities were consigned, with a few antiquities and a collection of anatomical preparations. The science of natural history however soon made a rapid progress; and the collection of Sir Hans Sloane, which when purchased was deemed of the first magnitude, insensibly diminished in its comparative value, particularly in the classes of ornithology and mineralogy.

In order to supply the first of these deficiencies, the trust-

tees, in 1769, purchased a collection of well-preserved stuffed birds which had been brought over from Holland, for 460*l.*; many additions were afterwards made by purchase and donation. The voyages of discovery early in the reign of George III. brought numerous acquisitions; and in 1845 a rich collection of British zoology, which had belonged to Col. Montague, of Knowle in Devonshire (including a very large number of birds), was purchased for 1100*l.* Since that time still larger acquisitions have been made, and the aggregate forms a collection, not indeed complete, but as extensive as most of the collections in Europe. A valuable collection of stuffed birds has recently been bequeathed to the Museum by the late Major General Hardwicke.

In regard to the second deficiency, it is to be observed that the specimens of minerals of Sir Hans Sloane's Museum were collected at a period when the science of mineralogy may be said to have scarcely existed. Most of them had been chosen for him by persons of little skill, or had been intended to elucidate some system which had become obsolete. Mr. Gustavus Brander's collection of Hampshire fossils was added in 1765; and a third small collection, made on the N.W. coast of America by Mr. Menzies, who accompanied Capt. Vancouver as a naturalist, was presented to the Museum in 1797 by King George III. This latter collection contained little that was particularly curious, except that it supplied a kind of mineralogical history of an extensive but little explored coast. A systematic collection of minerals for the benefit of persons pursuing the study of mineralogy was not attempted by the trustees till 1799, when they supplied the deficiency in that branch of their institution by acquiring, at the price of 700*l.*, a well-chosen collection of minerals of every class, consisting of 7000 specimens, which had been made by Charles Hatchett, Esq. during his travels in various parts of Europe. All that was valuable of the Sloanean collection was incorporated with this ample accession, and with the addition of what the Rev. C. M. Cracherode's bequest afterwards supplied, formed, even before the addition of the Greville minerals, a copious and useful mineralogical collection. In 1810 an opportunity presented itself of acquiring the extensive collection of minerals formed by Col. Greville, which were purchased by vote of parliament for 18,727*l.*; in 1816 the Beroldingen fossils were purchased; and to these collections King George IV. added a large and splendid collection of minerals from the Harz Mountains, formerly preserved in the Observatory at Richmond.

Round the side of a portion of the Long Gallery which now contains the minerals, the secondary fossils are in a course of arrangement in upright cases. In Saurian fossils the Museum is eminently rich, as well as in gigantic osseous remains, and in impressions of vegetables, fruits, and fish. Some of these acquisitions have been obtained at very considerable expense.

Two of the greatest rarities of the mineralogical collection are the sculptured tortoise in the centre of the gallery, wrought in Nephritic stone, and found on the banks of the Jumna, near Allahabad, in Hindostan; and a large specimen of meteoric cellular native iron from the province of Atacama, in Peru.

The collection of minerals is daily increasing, and is at this time superior to any in Europe.

The system adopted for its arrangement, with occasional slight deviation, is that of Professor Berzelius, founded upon the electro-chemical theory and the doctrine of definite proportions as developed by him in a memoir read before the Royal Academy of Sciences at Stockholm in 1824. The detail of the arrangement is supplied by the running titles on the outsides of the glass cases, and by the labels within them. The ornithological portion of the natural history is arranged according to Temminck, and his generic names are in general adopted, with the specific names of Linnaeus and the English synonymes of Latham. The names of donors in this, as well as in other parts of the general museum collection, are attached to specimens which have been presented.

The amphibia, crustacea, reptiles in spirits, sea-eggs, and star-fish, with the general collection of fish and corals, form a separate division of the natural history: the principal collections of crustacea and spiders are preserved in proper cabinets in a separate room.

The shells of the Museum, the collection of which has gradually accumulated upon the foundation laid by Sir Hans Sloane, form another division of the natural history

of no small extent; they are in numerous instances accompanied by clay models of the different molluscous animals. They are arranged in classes, orders, and genera; and to each group the name is attached. Lamarck's system has been adopted as the basis for general arrangement, occasionally interpolated with the genera of other authors where Lamarck has left lacunæ.

The entomological branch of the department of natural history is, strictly speaking, but of late creation, the greater portion of Sir Hans Sloane's insects having perished from length of time, or the insufficient methods then taken to preserve them. Purchases and donations however are continually swelling their number, and a large accession has been recently received as a part of the bequest from General Hardwicke. A small but interesting collection of the insects of Sierra Leone has also been recently presented by the Rev. Mr. Morgan. The collection, exclusive of General Hardwicke's bequest, fills 23 cabinets of large size, and is as extensive a collection of insects as that at Paris.

Department of Antiquities.—In the infancy of the Museum, the antiquities being few in number and of little value, were considered, with other artificial curiosities, as an appendage to the natural history: the coins, medals, and drawings of the museum collection were at that time appended to the department of MSS.; and the prints and engravings to the library of printed books. In 1772 a very considerable assemblage of articles of Greek and Roman antiquity, comprising the largest collection then known of ancient fictile vases, had been purchased of Sir William Hamilton for 8400*l.*, schedules of which were drawn up by D'Hancarville. The original building of the Museum was still spacious enough to contain all that was accumulated in every department; and the articles purchased, in this instance, were not so numerous as to require an increase of the establishment. The arrival of the Egyptian monuments acquired by the capitulation of Alexandria in 1801, which were ordered in the following year by King George III. to be placed in the British Museum, first suggested the erection of an additional edifice, rendered still more indispensable by the purchase of the Townley Marbles in 1807. Accordingly, upon the completion of the building intended for the two collections, a new department was created, in 1807, by the name of the Department of Antiquities, and a magnificent collection of ancient sculpture was at length opened for the inspection of strangers and the improvement of artists, an advantage which the students in the fine arts had never before enjoyed in this country. To this department the Hamilton Vases and antiquities were transferred, together with the coins, medals, drawings, and engravings.

In 1814, a communication having been made by the Townley family that there still remained in their possession a very large collection of ancient bronze figures and utensils, of Greek and Roman coins, gems, drawings, &c., all of which served essentially to illustrate the sculptures purchased in 1805, the House of Commons granted in the session of parliament in that year the sum of 8200*l.* for the purchase.

In 1815 the Prince Regent, at an expense of little less than 20,000*l.*, purchased and ordered to be deposited in the Museum an extensive series of marble sculptures, the frieze of a temple, which had been dug up at Phigaleia in Arcadia, and are known, from Pausanias, to be the genuine productions of the earlier time of the school of Phidias. To these, in 1816, was added the Elgin collection, which, as contributing to the progress of the arts in this country, is the most important accession received by the Museum since its institution. It chiefly consists of the exquisite sculptures which once adorned the pediments and frieze of the Temple of Minerva on the Acropolis of Athens. For the purchase of these parliament voted the sum of 35,000*l.*

In 1810 the Duke of Portland offered to deposit the Portland Vase in the British Museum (the property to remain with him), where it is still exhibited.

No integral collection of Greek or Roman sculptures of any extent has been added to the galleries of sculpture since the arrival of the Elgin collection; but numerous marbles of the higher class have been purchased from time to time, among which may be mentioned the bas-relief of Jupiter and Leda, bought of Col. de Bosset; a Cupid from Mr. Burke's collection; the group of Mithra, bought of Mr. Standish; the Rondinini Fawn; the Torso of Venus, which was injured by the fire at Richmond House; a statue of Hadrian; a bas-relief of the Apotheosis of Homer, purchased for 1000*l.*; a Venus of the Capital, presented by his

present Majesty; and a collection of Persepolitan marbles, presented in 1825 by Sir Gore Ouseley, forming a valuable addition to some which had been previously presented by the earl of Aberdeen.

Nearly till this time the bronzes, chiefly belonging to the Hamilton and Townley collections, though numerous and in some instances large and fine, formed but a subordinate feature in the museum department of antiquities. In 1824 Mr. R. Payne Knight, a trustee, whose attainments in ancient literature and knowledge of the fine arts were known not only in this country but throughout Europe, besides marbles and other objects, bequeathed to the Museum a valuable and extensive series of ancient bronzes, 798 in number; less numerous and of smaller dimensions than most of those found in Pompeii and Herculaneum, but in beauty of workmanship and admirable state of preservation superior even to those in the museum of the king of Naples. To this part of the collection, in 1833, the bronzes of Siris, purchased, by subscription, from the Chev. Brøndsted, were added, at the expense of 1000*l.* In 1825 the trustees obtained a large collection of Babylonian antiquities.

Coins and Medals.—The foundation of this part of the collection was laid in the cabinets of Sir Robert Cotton and Sir Hans Sloane. More than 6000 ancient medals were purchased with the Hamilton collection in 1772. In 1799 a collection of coins and medals, estimated at the value of 6000*l.*, was bequeathed to the Museum by the Rev. Clayton Mordaunt Cracherode. In 1802 the trustees purchased the most complete series of Anglo-Saxon coins then known, which had belonged to Samuel Tyssen, Esq., for 620*l.* In 1810 a series of the coins of England from the Conquest to the reign of George III., which had been made by Edward Roberts, Esq. of the Exchequer, for his son, was purchased for the sum of 4000 guineas, and about the same time a series of papal medals for 135*l.* and a collection of Greek coins from Col. de Bosset for 800*l.* In 1814 the Townley collection of Greek and Roman coins (particularly rich in Roman large and second brass) was added by vote of parliament, with a collection of Greek coins offered for sale by Capt. Cust, purchased by the Treasury for the sum of 530*l.* Another considerable as well as choice collection of Greek coins was obtained at the time of the purchase of the Elgin Marbles. In 1818 Lady Banks presented all such coins and medals belonging to the extensive cabinet of Mrs. S. S. Banks as were not previously in the Museum, including a collection of foreign coins of vast extent. In 1824 Mr. R. Payne Knight bequeathed his Greek coins to the Museum, which, joined to the Greek coins already in the cabinets, made the Museum series of kings and cities superior even to the celebrated collection of the king of France. Early in 1825 parliament purchased for the Museum, together with Mr. Rich's collection of MSS., a large assemblage of early Arabian, Parthian, and Sassanian coins, of the estimated value of 1000*l.*; and in the same year King George IV. presented to the Museum the cabinet of coins and medals which had been attached to the library of George III., rich in English, but more especially rich in the foreign series, particularly in German coins, in papal, Flemish, and Dutch medals, and in an almost unrivalled collection of medals of the illustrious men of Italy.

The last cabinet of great extent acquired is that of William Marsden, Esq., consisting entirely of Oriental coins, divided into two portions: the first includes not only the coins belonging to the great empire of the Khalifa, but those of the various dynasties which sprung from its ruins, forming the currency of the W. regions of Asia, and of the Mohammedan kingdoms and states formerly or at present existing in Africa and Europe; the second portion belongs to the more E. division of the Asiatic continent, including the coins of Persia, India, and China, together with those of the Indo-Chinese peninsulas and of the islands geographically connected with them as far as Japan. This splendid collection was presented to the Museum, in addition to many former gifts, by Mr. Marsden in 1834.

The generosity of individuals, and the exertions of the trustees as opportunities present themselves, are continually bringing acquisitions of a minor kind to this branch of the department of antiquities. Instances of the former may be mentioned in 174 coins of the Anglo-Saxon series, found at Dorking in Surrey in 1818, given by Robert Barclay, Esq. of Bury Hill, and George Dewdney, Esq. of Dorking, chiefly by the former gentleman; and in a large collection of the coins of the two first Edwards, found at

Tutbury in Staffordshire in June, 1831, presented by Lord Holland, chancellor of the duchy of Lancaster. Among the acquisitions of the trustees by casual purchase may be enumerated a selection from 5700 pennies of Henry II., found in 1814 at Tealby in Lincolnshire, the best specimens of all the varieties of towns and mint-masters of which were purchased for the Museum; and in a large accession to the already numerous coins of Canute found at Halton Moor near Lancaster, purchased in 1815. Eight hundred pounds were expended in purchases to supply deficiencies of every kind at the sale of the coins of Marmaduke Trattle, Esq. and in 1833, 1000*l.* were expended in the purchase of coins in gold, silver, and brass, chiefly Greek, selected from the cabinet of Mr. Borrel. Two hundred and ninety-six stycas of Ethelred, Eanred, and Redulf, kings of Northumberland, and of Vigmund and Eanbald, archbishops of York, found at Hexham in 1832, were purchased in the same year; with no fewer than 659 varieties of pennies of King William the Conqueror found at Beaworth in Hampshire. A considerable collection of Bactrian coins has also been recently purchased of Lieutenant Burnes.

In engraved gems, principally from the collections of Sir William Hamilton, Charles Townley, Esq., the Rev. C. M. Cracherode, and R. P. Knight, Esq., the department of antiquities is especially rich, as well as in antique pastes, and in specimens of antique glass. In necklaces, ear-rings, armillæ, and other trinkets of gold, this department is also rich. The latest acquisition of this kind is the gold breast-plate, supposed to have belonged to a British chieftain, lately found in Flintshire.

In the division which contains drawings and engravings there are one or two superb drawings by Rubens: a large collection of drawings of the Italian school: three volumes, a part of Mr. R. P. Knight's bequest, containing 272 original drawings of Claude Lorraine: a numerous assemblage of drawings of the Dutch school: several hundred drawings by Albert Durer and other old German masters: a large collection of Van Hüysen's drawings of plants, which formerly belonged to the Sloane collection: a collection of drawings of plants and costumes by native artists of China: Parr's and Revett's views in Greece and Asia Minor, chiefly architectural, in two volumes, accompanied by a third volume containing Towne's views in Rome and its vicinity: three volumes of highly finished drawings in black chalk, copied from the most celebrated pictures in Rome, and accompanied by an extra volume after the frescos of Guido in the private chapel of the Vatican, by Musman; these were presented to the Museum by the Earl of Exeter, and cost near 3000*l.* There is also a large collection of drawings from antique marbles, gems, &c. formerly belonging to Mr. Charles Townley; and two folios of drawings made under the direction of the Earl of Elgin at Athens.

In the collection of prints, among numerous impressions of works of Niello, is a sulphur of the celebrated Pax by Maso Finiguerra, of the Assumption of the Virgin, anno 1452, purchased in 1835 for 270 guineas. The prints of the different masters are for the most part arranged in schools, as the Florentine school, the school of Siena, the Roman school, the Bolognese, Lombard, and Venetian schools, the schools of Genoa and Naples, the French school, &c. There are large and almost complete collections of the works of Marc Antonio, Bonasoni, Rembrandt, and Hollar: a very fine and extensive assemblage of Hogarth's prints, the foundation of which was laid in 1823 by the purchase of Mr. Packer's collection, of Dumow, for 315*l.*: a Granger collection of English portraits of great extent: a very large collection of early German prints in wood: an almost perfect collection of prints engraved after the pictures of Sir Joshua Reynolds: a large collection of Bartolozzi's engravings: Dr. Burney's collection of theatrical portraits: an immense collection of foreign portraits, purchased with the library of the Baron de Moll of Munich: and a Pennant's History of London, illustrated with prints and drawings, in fourteen volumes in folio of the largest size, made by the late Mr. Crole at an expense of 7000*l.*, by whom it was bequeathed to the Museum.

In the print room also is preserved one of the most wonderful specimens of art, in a carving in hone by Albert Durer in alto-rilievo, representing the birth of St. John Baptist, dated 1510, for which Mr. Knight, who bequeathed it to the Museum, gave 500*l.*

From 1802, when the monuments taken from the French

at Alexandria arrived, till 1817, no material additions were made to the Egyptian part of the antiquity department; but in that year the upper part of a fine colossal statue, commonly though incorrectly called the Memnon, taken from Thebes by Belzoni, was given to the Museum in the joint names of Henry Salt, Esq., the British consul at Alexandria, and Louis Burckhardt, Esq. In 1823 the trustees, by the aid of parliament, obtained Mr. Salt's first collection of Egyptian antiquities (exclusive of an alabaster sarcophagus, afterwards purchased by Sir John Soane) for 2000*l*. Another collection, particularly illustrative of the domestic manners of the ancient inhabitants of Egypt, belonging to Mr. Joseph Sams, was purchased by parliament at the recommendation of the trustees, in 1834, for 2500*l*.: a considerable number of antiquities of the same description were presented to the Museum in the same year by J. G. Wilkinson, Esq., and in 1835 a still larger accession was obtained by an expenditure of 508*l* 16*s* at the sale of Mr. Salt's third collection of Egyptian antiquities, including numerous papyri which have been since unrolled. In this year also Lord Prudhoe added to the Museum collection the two fine lions of red granite which his lordship had procured at Jebel Barkal in Nubia. [BARKAL.]

Under these accumulated accessions the old Egyptian room became no longer sufficient for its purpose. The larger articles of Egyptian sculpture, the colossal heads, tablets, and fresco paintings have been in consequence removed to a more spacious apartment, now termed the Egyptian saloon, in the lower story of the west wing of the new buildings. The smaller articles, illustrative of the domestic life of the Egyptians, at present under arrangement, are designed to fill two apartments of the story above as soon as they are completed.

Connected with the department of antiquities, and of great importance to the young artist, is a large collection of architectural and other casts in plaster, the property of the late Sir Thomas Lawrence, purchased and presented to the Museum in 1831 by the Royal Academy: a small collection of works of modern art is also attached to this department, the pictures belonging to which, chiefly portraits, are hung in the long gallery which contains the minerals in the new east wing. In the print-room is Sir Joshua Reynolds's portrait of Sir William Hamilton; in the committee-room that of Sir Joseph Banks by Sir Thomas Lawrence; and in the hall of the old building the statues of Shakspeare by Roubiliac, and of Sir Joseph Banks by Chantrey: a few modern busts, some of which belonged to Mr. R. P. Knight, are preserved in the medal-room, together with a gold snuff-box set with diamonds and ornamented with a miniature portrait of the Emperor Napoleon, by whom it was presented in 1815 to the Hon. Mrs. Damer.

Fifth or Banksian Department.—Sir Joseph Banks, who died in 1820, in one of the codicils to his will bequeathed the use and enjoyment of his library and botanical collections for life to his librarian Robert Brown Esq., afterwards to come to the British Museum. But the trustees conceiving these collections to be in a state of possible danger from fire, being in a private house, surrounded by other private houses, in order to secure the library and collections for public benefit with as little delay as possible, came to an arrangement with Mr. Brown, who in consequence was appointed to the office of an under-librarian in the Museum. Sir Joseph Banks's library being transferred, but kept distinct, was added to the general collection of books; but the botanical collections were ordered to be united with Sir Hans Sloane's herbaria, and Mr. Brown was placed at the head of a botanical or Banksian department. All the botanical collections of the Museum were thus brought together and rendered equally accessible.

The Sloanean herbaria are contained in 336 volumes, bound in 262, and consist of Sir Hans Sloane's collections made by himself in Jamaica and elsewhere, and of various others presented to or purchased by him. Of the latter the most considerable are those of Plukenet and Petiver. Among them there are also large collections made by the duchess of Beaufort, Kiggalaer, Buddle, Uvedale, and Hawkins; together with numerous smaller ones obtained from many of the principal botanists and travellers of the day. The most interesting are from the collections of Morret, Cunningham, Hermann, Bobart, Bernard de Jussieu, Tournefort, Scheuchzer, Kamel, Vaillant, Kæmpfer, Catesby, Houston, and Boerhaave, with the plants presented to the Royal Society by the Company of Apothecaries in pursuance

of the directions of Sir Hans Sloane, for the years from 1722 to 1796. These formed the rent which the Apothecaries' Company paid for the botanic garden at Chelsea. The seeds and fruits of Sir Hans Sloane's collection are now extensive and well preserved. The Herbarium of the Barona de Moll of Munich, in 48 portfolios, was added to the botany in the Museum in 1815.

The herbarium of Sir Joseph Banks, of which the larger and arranged portion is contained in cabinets, comprises upwards of 24,000 species, the materials in progress of arrangement being estimated to contain 5000 more. This herbarium is formed, in addition to Sir Joseph's own contributions upon his voyage with Captain Cook, of the herbaria of Clifford, Hermann, Clayton, Aublet, Miller, and Jacquin, with many of the plants collected by Tournefort and deCandolle in his 'Corollarium.' Aublet's plants were from French Guiana; the collections of Clifford and Hermann were from which Linnæus formed his Hortus Cliffortianus and Flora Zeylanica; Clayton's Herbarium was that from which Gronovius formed his Flora Virginica. It comprises also the plants collected in the various voyages of discovery subsequent to Sir Joseph Banks's own, with the contributions of numerous travellers, and a collection of plants sent to Loureiro from Cochinchina. The Banksian collection alone formed at one time the most valuable assemblage of dried plants in Europe, and is still one of the most important, not only on account of its extent, but as containing the original and authentic specimens of many published species. There are but few public collections in Europe at present of greater or even of equal extent. The most extensive of these, namely, that of the Jardin du Roi at Paris, contains perhaps a considerably greater number of species, while the public collection at Berlin, the next to that of Paris, is judged to be hardly superior in number to the Banksian. A collection of flowers and fruits, chiefly of more rare or succulent plants, preserved in spirits, forms a part of the Banksian department, to the amount of upwards of 300 bottles; with a collection of seeds and fruits in a dried state. Since the arrival of Sir Joseph Banks's collection, an extensive series of plants has been presented by the East India Company, formed and distributed by Dr. Wallich, and another collection, of Egyptian plants, has been presented by J. G. Wilkinson, Esq. Other less extensive additions have been made partly by donation and partly by purchase.

The government of the Museum is vested under the authority of parliament 26 Geo. II. and two or three other acts, in 23 trustees, including 23 official trustees, nine family trustees, one royal trustee, and 15 trustees who are elected by the other 33. The official trustees are the archbishop of Canterbury, the lord chancellor, the speaker of the House of Commons, the lord president of the council, the first lord of the treasury, the lord privy seal, the first lord of the admiralty, the lord steward, the lord chamberlain, the three principal secretaries of state, the bishop of London, the chancellor of the Exchequer, the lord chief justice of the King's Bench, the master of the rolls, the lord chief justice of the Common Pleas, the attorney-general, the solicitor-general, the president of the Royal Society, the president of the Society of Antiquaries, and the president of the Royal Academy. Of the family trustees, two represent the Stowe, two the Cottonian, two the Harleian, one the Townley, one the Elgin, and one the Knight families, by whom they are respectively appointed. The royal trustee is the duke of Northumberland, appointed by his Majesty. The appointment of the trustees of the Sloanean, Cottonian, and Harleian families was provided for by the Act of 26 George II. Those of the Townley, Elgin, and Knight families are nominated under the respective acts by which the collections they represent were acquired. The act for the appointment of the presidents of the Society of Antiquaries and of the Royal Academy, as official trustees, passed 5 George I. That for the nomination of a royal trustee (who, in the first instance, was the duke of Gloucester) passed 3 William IV.

The present establishment of officers consists of a principal librarian, who is also expositor; six under librarians, six assistant librarians, and three extra assistant librarians; the name of librarian being given to the officers of all the departments; a secretary, and an accountant. Several persons of literary eminence are also employed as assistants. There are also attendants in the several departments, and clerks of the works, household servants, &c.

The patronage of the Museum, that is, the appointment

to vacant offices, is vested in the three principal trustees only, the archbishop of Canterbury, the lord chancellor, and the speaker of the House of Commons, except in the appointment of the principal librarian, when two persons are presented by the three principal trustees to the king as fit to fill the office, and his Majesty makes choice of one of them.

The following are the regulations under which the Museum is maintained at the present moment for public use. It is open for general inspection every Monday, Wednesday, and Friday in every week, from the hour of ten till four, except in the Christmas, Easter, and Whitsun weeks, during the month of September, and on four single holidays. Tuesdays and Thursdays in every week are devoted to artists and other students in the different departments, and a few companies are admitted on those days, who are not likely to disturb them. Foreigners and artists are also admitted during the month of September.

The reading room of the Museum is open from ten till four every day except on Sundays, and except for one week at Christmas, Easter, and Whitsuntide respectively, and on the four single holidays already mentioned. Persons desirous of admission send their applications to the principal librarian, or, in his absence, to the senior under librarian, who either admits them immediately, or lays their applications before the next general meeting or committee of trustees. All persons who apply for this privilege are to produce a recommendation satisfactory to a trustee or an officer of the house. Permission is then granted for six months, always renewable from time to time at the expiration of each term. No tracings from books or MSS. are allowed to be made without particular permission; and no entire MS. can be transcribed without leave from the trustees.

The following are the catalogues and descriptions of the different departments of the British Museum already published:—

Department of Manuscripts.—Catalogue of the MSS. of the king's or old Royal Library, by David Casley, 4to. 1734. MSS. heretofore undescribed, by Rev. S. Ayscough, 2 vols. 4to. 1782. Cottonian MSS. by Joseph Planta, Esq., fol. 1802. Harleian MSS. by H. Wanley and Rev. R. Nares, 4 vols. fol. 1808. Hargrave MSS. by H. Ellis, 4to. 1818. Lansdowne MSS. by F. Douce and H. Ellis, fol. 1819. Arundel MSS. by Rev. J. Forshall, fol. 1834.

Department of Private Books.—Alphabetical catalogue of the library of printed books, by H. Ellis and Rev. H. H. Baber, 7 vols. 8vo. 1813—1819. Catalogue of the geographical and topographical collection attached to the library of King George III., in 1 vol. folio (to match the catalogue privately printed of the royal library), and 2 vols. 8vo. 1829.

Department of Antiquities.—Description of the antient Terracottas, by T. Combe, Esq. 4to., 1816. Of the Marbles, part I. to IV. by the same, 4to. 1812—1820. Part V. by E. Hawkins, Esq. 1826. Part VI. by C. R. Cockerell, Esq., 1836. Catalogue of Greek coins by Taylor Combe, 4to. 1814. Of Anglo-Gallic coins, by Edw. Hawkins, 4to. 1826. Mr. R. P. Knight's catalogue of his Greek coins, 4to. 1830. A catalogue of the greater part of Mr. Marsden's Oriental coins was published by himself, entitled 'Numismata Orientalia illustrata, Part I. 4to. 1823. Part II. 4to. Lond. 1825.

Manuscript catalogues of the additions in the printed book and MS. departments to the latest time are kept in the Museum reading-room. There is also a separate MS. catalogue of the great collection of tracts relating to the civil wars of Charles I.; a separate catalogue of the Cole MSS.; and copies of the catalogue, privately printed by order of King George IV., of the Royal Library. Dictionaries and lexicons in all languages, with more than 8000 books of reference, are constantly open for the use of students of the reading-room in the cases and presses which surround them.

In 1823 Sir George Beaumont communicated his desire to present to the trustees of the British Museum, for the benefit of the public, his collection of pictures; but the then buildings of the Museum afforded no proper rooms for their exhibition, and the trustees were unable to receive them at the moment. In consequence of this, the late Lord Dover, then Mr. Agar Ellis, announced in parliament his intention of moving for a grant in the succeeding session, to be applied under commissioners, to the purchase of Mr. Angerstein's and other collections of pictures for the formation of a NATIONAL GALLERY; to which it was conceived Sir George Beaumont's pictures might be added.

In the spring of 1824 Lord Liverpool announced that the Angerstein Gallery had been purchased by the government for 57,000*l.*; and it appearing to be the opinion of the House of Commons, expressed in their debates, that the gallery should be placed in a central situation, where the pictures would be most accessible, the trustees of the Museum made no hesitation in allowing the transfer of Sir George Beaumont's pictures to the same destination, but without relinquishing their trust; a certain number of trustees of the British Museum are, in consequence, trustees of the National Gallery, thus retaining their property in the pictures as well as a joint exercise of superintendance. In 1831 the Rev. Holwell Carr bequeathed another collection of pictures to the trustees, with a distinct direction that they should be placed in the same building with Mr. Angerstein's and Sir George Beaumont's pictures. Other individual pictures of merit have been occasionally forwarded by the trustees to the same repository; as, in 1826, Sir Joshua Reynolds's picture of the Captive Lord, presented to them by the Rev. William Long; and, in 1827, a landscape by Gainsborough, presented by Lord Farnborough, and the Banishment of Cleombrotus by Leonidas by Mr. West, presented by William Wilkins, Esq.

BRITTON. We have, under 'BRACRON,' enumerated all the principal writings of those early English lawyers and masters of jurisprudence, who are meant when we hear of 'the antient text-writers of our law.' In respect of the time in which they lived, it may be said to extend from towards the close of the twelfth to the middle of the fifteenth century. It is remarkable that so much obscurity should rest on the personal history of those writers, who were men of eminent abilities, treating of their subject with great precision and learning, and writing, it may be said, even with elegance.

We have seen that there is doubt who Bracton was. There is still more doubt respecting Britton, whose existence as an individual person has even been doubted. Selden, who on such points is a high authority, in his notes upon Fleta, contends that 'Britton' is nothing more than a sophistication of 'Bracton,' and that to the same hand to which we owe the treatise in Latin before mentioned, we owe also the French treatise known by the name of 'Britton.' This was Selden's later opinion; for in an earlier work he has spoken of them as two distinct writers. John le Breton, bishop of Hereford, who died in the third year of Edward I., has been supposed to be the author (*Tanner, Bibliotheca*, p. 119). Others attribute it to a John Breton, who was a judge in the first year of Edward II. There seems no reason to doubt that the work was composed in the reign of King Edward I.

Britton treats of almost every point in the practice of the common law, in 126 chapters.

The high esteem in which the work was held, is evidenced by the numerous manuscripts of it which still exist in our great libraries. In the British Museum are several of great value.

It was first printed in 1540 by Redman, who had meditated doing so before; for he tells us in the preface that 'he had of long time a fervent zeal and inward affection to imprint the fountain (as who saith) or well of the same learnings, from whence those old judges in the time of King Edward the First and since, have sucked their reasons and grounded their learnings.' A century later, namely in 1640, there was another edition published by Wingate, a lawyer. These are the only editions which have appeared in England. Britton is contained in the edition of the early writers on English law, by M. Houard, a French lawyer, in six quarto volumes, a noble undertaking, intended to promote in France the study of comparative jurisprudence.

There still remains however the very necessary work to be performed of a collation of the existing manuscripts. This is a work which ought to be done for every writing of value in any department of literature, which was published by the early printers, who seldom did more than follow some one manuscript which happened to have fallen into their hands, and which might not always happen to be the purest and the best. It has lately been in contemplation to prepare such an edition, and a specimen of the intended work may be seen in *Cooper on the Public Records*, 8vo., 1832, vol. ii. p. 403-412; the text being taken from what is perhaps the best manuscript (Harleian, 324), and the margin presenting the various readings found in many other manuscripts.

In 1762, a translation of Britton, as far as the 25th chapter, was published by Mr. Robert Kelham; but the work did not receive much encouragement. He translated the remaining portions, but the manuscript remained in his hands till 1807, when being then the senior member of Lincoln's Inn, and eighty-nine years of age, he presented it to the library of that society, where it now remains.

BRIVE, or **BRIVES LA GAILLARDE**, a town in France, capital of an arrond. in the dep. of Corrèze, on the road from Paris to Montauban and Toulouse; 299 m. S. or S. by W. of Paris; in 45° 8' N. lat. and 1° 32' E. long.

It appears to have been a place of some importance in the ages succeeding the downfall of the Roman empire, for here, in the latter part of the sixth century, Gondobaud, an illegitimate branch of the Merovingian kings of the Franks, caused himself to be proclaimed king. The town is pleasantly situated opposite to an island in the riv. Corrèze, over which are two bridges; and is superior in situation to most of the towns of the dep. The valley in which it stands is bounded by hills crowned with vines and chestnut trees: the pleasantness of the site has given to the town the surname of *La Gaillarde*, 'the gay.' Brives is environed by a pleasant walk planted with elm trees and skirted with good stone houses; but in the interior we do not meet either with handsome streets or good squares. It had before the Revolution one collegiate and several parochial churches, six religious communities, and a good college. The manufactures are chiefly of large copper utensils and silk and cotton goods; and these, with chestnuts, nut-oil, wine, brandy, wax, and wood, constitute the chief articles of trade. A great quantity of cattle are reared in the neighbourhood for the Paris market, and many pigs for Bordeaux and the south of France. Slate and antimony are obtained at no great distance. The pop. in 1832 amounted to 5776 for the town, or 8031 for the whole commune. There are a high school, a public library, an agricultural society, and an hospital.

The arrond. of Brives had, in 1832, 111,024 inh. In a valley two or three miles S. of Brives are several apartments excavated in a rock and pierced with doors and windows; these apartments were probably formed as a place of refuge from the ravages of war, but the peasantry ascribe to them a marvellous origin.

BRIXEN, in the Austrian circle of the Pusterthal and Eisak, in the Tyrol, though a small town, was, before the French revolution, the capital of an independent bishopric, the possessions of which extended over a surface of nearly 360 sq. m., having a pop. of upwards of 26,000 souls. The town lies at the foot of the Brenner, and at the confluence of the Rienz and Eisak, in the bosom of a cheerful, fertile valley, encircled by lofty mountains. It has a poverty-stricken appearance; the houses are in the Italian style, but ill-built, the streets are badly paved, and the number of inh. does not at present exceed 4000. It is still the residence of a bishop, whose palace, together with the handsome cathedral of St. Julian, four other churches, and the town-hall, are the principal edifices in the place. It has a gymnasium, an episcopal seminary with a theological school attached to it, a Capuchin monastery, a female school conducted by the nuns of the English sisterhood, and a convent of the Tertian sisters. The adjacent mountains are studded with vineyards which produce a very palatable red wine, in which the chief trade of Brixen consists. 46° 40' N. lat. 11° 47' E. long.

BRIXHAM (DEVON), a sea-port, m. t., and par., in the hund. of Haytor and co. of Devon, 22 m. S. from Exeter, 165 W.S.W. from London, and in 51° 25' N. lat. and 3° 32' W. long. The area of the par. is 5210 English statute acres.

The manor of Brixham formerly belonged to the Wovants, and from thence it passed into the hands of the Valetort family, by whom it was sold, and it is now divided into quarters, some of which quarters are again subdivided, and the shareholders (many of them common fishermen) all call themselves quay lords. The har. consists of two basins: the outer one has been recently formed, at an expense of nearly 5300*l.*, raised solely amongst the inh. There are about 120 vessels employed in the port from 60 to 150 tons burden, and 105 from 20 to 45 tons burden, and about 64 smaller boats, nearly all engaged in the fishing trade. The principal fish caught here are the turbot, mackerel, mullet, and soles; they are sent in great quantities to the London, Bath, and Exeter markets. Brixham has a fair on Whit-Tuesday and the following day, and a market was esta-

lished in 1799, by authority of an act of parliament passed in that year.

The town is prettily situated on the S. side of Torbay, about a mile and a half S.W. from Berryhead, and directly facing the delightful watering-place Torquay, from which it is distant across the bay about seven m. The part near the water is called Brixham Quay, or Lower Brixham, and is a miserable looking place; the houses irregularly built, the streets narrow and filthy, and the smell of tar and fish is intolerable. The upper town, called Church Town, about a mile from the quay, is much better, and contains some good houses. The church is dedicated to the Virgin Mary; it has lately been enlarged by 800 sittings, of which 700 are free, the incorporated Society for the Enlargement of Churches having granted 700*l.* At Lower Brixham is a chapel of ease, erected by subscription, with 1200*l.* added by the parliamentary commissioners. There are also places of worship for Baptists and Wesleyan Methodists. The pop. of Brixham is 5015, of which 2110 are males and 2905 females: a great proportion of the males are employed in registered vessels.

A national school has been united with an old establishment endowed in 1634. The master has a house and garden and a salary of 60*l.* per annum; two school-rooms have lately been erected near the master's house, where 500 children of both sexes are instructed. Richard Kelly gave to this establishment 15*l.* per annum. Mr. John Kelland left by his will (dated 1709) a sum of 2000*l.* for the endowing of charity schools and augmentation of small livings, at the discretion of his trustees; in consequence of which John Towns, Esq., one of them, appropriated the sum of 490*l.* to the par. of Brixham, and purchased with it an estate at Ashburton, now let at 42*l.* per annum, in aid of this school. Besides the land there is now about 700*l.* stock belonging to this charity.

Brixham was the landing-place of the Prince of Orange, afterwards William III., on the 5th of November, 1688.

In the church is a cenotaph of Sir Francis Buller, the judge. In the neighbourhood of Brixham is Lupton, formerly in the possession of the ancient family of the Pennington; it now belongs to Sir J. B. Y. Buller, Bart., grandson of the judge; and also a curious well, called Lay Well, the water of which ebbs and flows about nine times in an hour.

(Sir William de la Pole's *Description of Devon*; Lysons's *Magna Britannia*; *Pop. Reports*; *Correspondence*, &c.)

BROACH. [BAROACH.]

BROADSTAIRS. [KENT.]

BROCCHI, GIOVANNI BATTISTA, was born at Bassano, in the Venetian territory, in February, 1772. He studied in the college of his native town, and afterwards at the university of Padua, his father intending him for the profession of the law; but young Brocchi's chief attention was directed to botany and mineralogy, and when the time came for his examination previous to his taking his doctor's degree, he left Padua abruptly and went to Rome, where he became acquainted with the learned Lanzi, with whose assistance he became well versed in Roman and Greek archaeology. He paid particular attention to the Egyptian antiquities at Rome, and he wrote some dissertations on Egyptian sculpture. Having returned to Bassano, he continued his studies of the natural sciences, and in 1802 was appointed professor of botany in the newly established Lyceum of Brescia. He was made secretary to the Athenæum or scientific academy of that city, and he was the first editor of the *Memoirs* of that institution. He also made excursions in the valleys and mountains of the province of Brescia, and having examined their geology and the mineral productions, he published '*Trattato mineralogico sulle Miniere di Ferro del Dipartimento del Mella, ed all'Esposizione della Costituzione fisica delle Montagne metallifere della Val Trompia*,' 2 vols. 8vo., Brescia, 1807. In 1808 he was made inspector of the mines of the kingdom of Italy, and soon after he was chosen a member of the Italian Institute. The results of his geological and mineralogical observations, made during his frequent excursions in various parts of Italy, were published in various works: 1. '*Memoria mineralogica sulla Valle di Fassa nel Trentino*,' Milano, 1811. The valley of Fassa, in the Italian Tyrol, near Brixen, which is very rich in magnificent crystals, stalactites, &c., had not been examined before by any of the explorers of the Alpine regions. 2. '*Conchiologia fossile subappennina, con Osservazioni geologiche sugli Appennini e sul Suolo adjacente*,' 2 v. 4^{to}, Milano, 1814. This, the prin-

oipal work of Brocchi, is the result of his repeated visits to the central and S. parts of Italy. It begins by an interesting historical sketch of the progress of geological studies in Italy, and of the persons who had cultivated the science previous to the author's time. This is followed by a general view of the structure of the Apennines, and a sketch of the physical constitution of the lower hills lying between these mountains and the sea, their various formations, and relative ages. It was to these subapennine hills and the adjacent valleys and plains, which abound in organic remains, that Brocchi's investigations were chiefly directed. He examined the numerous varieties of shells found among them, and identified those species which still exist in the seas of Italy, and which form nearly one-half of the whole. It should however be noticed that the rocks to which Brocchi assigned the name subapennine are not all precisely of the same geological age, and that the amount of recent shells detected in them has been since found to vary according to the relative antiquity of the rock in which they occur, the newer rocks containing the larger proportion of these shells. The second volume consists of a descriptive catalogue of the fossil shells, with the living analogues where they are known to exist. The work is accompanied with plates. 3. 'Catalogo ragionato di una raccolta di rocce disposto con ordine geografico per servire alla geognosia dell' Italia,' 8vo. Milano, 1817. This work contains a catalogue of more than 1500 specimens of rocks collected by Brocchi in various parts of Italy, and especially in the Campagna of Rome, the Terra di Lavoro and Puglia, the Marches, Tuscany, and Modena. It is preceded by a well-written introduction on the geology and mineralogy of the different regions of Italy. Several other minor works of Brocchi are printed in various Nos. of the 'Biblioteca Italiana,' between the years 1816-23. In 1820 Brocchi, after residing some time at Rome, published 'Dello Stato fisico del suolo di Roma, Memoria per servire d'illustrazione alla carta geognostica di questa Città.' The work is divided into two parts: he treats first of the antient condition and appearance of the surface of the ground on which Rome, both antient and modern, now stands; and, secondly, of the character of the soil, of the various rocks and strata of the hills and of the valleys between them and the Tiber. The map which accompanies the work gives a very correct idea of the physical topography of Rome. Brocchi's observations are accurate and valuable; but some of his inferences and hypotheses have met with much opposition, especially those in the latter part of the work, which consists of a 'Discourse on the Condition of the Air of Rome in Antient Times.' He argues that the air in antient times must have been more unwholesome than it is at present, although he admits that the country was much more populous and the people more healthy; he accounts for this apparent discrepancy by their dress and their manner of living. Brocchi made some curious experiments during four nights which he passed at S. Lorenzo fuor delle mura, one of the most unwholesome spots near Rome, in order to discover the deleterious principle which causes the malaria. He condensed the night mist or damp vapours floating in the air, and submitted them to a chemical analysis, but all his trouble and risk led to no satisfactory result. He gives a plain and straightforward account of his attempt at the end of the book.

In 1823 Brocchi sailed from Trieste for Egypt, a country which he had long wished to examine, especially with regard to its mineralogy. He found favour with Mehemet Ali, who sent him on several missions, supplying him with firmans, money, and an escort. He went first to direct the working of a coal mine, and afterwards to look for the emerald mines of Mount Zabarab, which Cailliaud and Belzoni had visited some years before. Brocchi however found only some loose pieces without their matrix, but seems to have considered any attempt at working the mines as useless labour. In 1825 Mehemet Ali sent Brocchi into the newly-conquered kingdom of Sennaar, as one of a commission appointed to organize that country and make its resources available. In this expedition, Brocchi fell a victim to the unhealthiness of the climate. He wrote to his friends in Italy in April, 1826, that he was busy in prosecuting his scientific researches and in promoting the improvement of the natives; that he enjoyed good health, notwithstanding the heat was at 105°. He was taken ill however in the summer, and died at Cartum in September of that year. His friend Acerbi, Austrian consul-general at Alexandria, recovered his papers and collections, and forwarded them,

according to his will, to his native town, Bassano. His rich collection of Italian minerals and fossils he had given to his friend Parolini, of Bassano, before he set out for Egypt. (Sacchi, *Varietà letterarie, Necrologia di G. B. Brocchi.*) Brocchi has done more for the geology of Italy than any of his predecessors.

BROCKEN. [HARZ.]

BROCKLESBY, RICHARD, the only son of Richard Brocklesby, Esq., of Cork, was born at Minehead, in Somersetshire, on the 11th of August, 1722. After receiving the rudiments of education in his father's house at Cork, he was sent to Ballytore school, in the N. of Ireland, where he formed an acquaintance with Edmund Burke, which ripened into the most cordial friendship when they again met in London. He afterwards studied at Edinburgh, and then at Leyden, where he took the degree of doctor of physic under the celebrated Gaubius, in June, 1745, his inaugural thesis being a dissertation 'De salivâ sanâ et morbosâ,' 4to. Lugd. Bat., 1745. The following year he came to London, and settled in Broad-street; and as the income allowed him by his father was not large, and his professional gains were at first small, he determined to regulate his expenses with the strictest economy, 'never suffering himself,' he used to say, 'to have a want that was not accommodable to his fortune.' The same year he published an 'Essay concerning the Mortality of the Horned Cattle,' 8vo., 1746, which contributed to found his reputation. In 1751 he was admitted a licentiate of the college of physicians; in 1754 he obtained the honorary degree of M.D. from the university of Dublin, and being admitted *ad eundem* at Cambridge, he was enabled to become a candidate, and in 1756, a fellow, of the London college of physicians. In 1758 he was appointed physician to the army, and served in Germany during great part of the Seven years war, where he was distinguished by his zeal, knowledge, and humanity; and particularly recommended himself to the notice of the Duke of Richmond, Lord Pembroke, and others. In 1760 he was appointed physician to the hospitals for the British forces, and returned to England before the peace of 1763. He now settled in Norfolk-street, Strand, and soon reaped the reward which skill, attention, and good humour seldom fail to attain, in a large and increasing practice. To this source of income were likewise added his half-pay, and his paternal estate of 600*l.* per annum. Being unmarried he was enabled to live in a very handsome style, and often entertained at his table some of the persons most distinguished for rank, abilities, or learning, in the kingdom.

In 1763 Dr. Brocklesby was called in to attend Wilkes, who was suffering from a wound in the abdomen received in his duel with Mr. Martin; and it is thought that Wilkes's rapid recovery gave a great impulse to his physician's rising reputation.

Dr. Brocklesby preserved in politics the same judicious moderation which was his general characteristic; for though he was a member of the Constitutional club, and a warm advocate of Wilkes on the points of *general warrants, and the Middlesex election*, he never forgot the respect due to the laws, and quitted the club as soon as it deviated into other doctrines, under other leaders.

In spite of the placidity of his temperament, he was once a principal in a duel, his antagonist being Dr. afterwards Sir John Elliott; but it must be confessed that this duel is one of the most peaceful and sensible upon record—the seconds having taken care to place the combatants at such a distance from each other that their balls, even if they should hit, could not possibly do any mischief.

As Dr. Brocklesby's prudent frugality had preserved him from embarrassment when poor, so it enabled him to indulge in the most munificent charity when rich. He had always upon his list two or three widows to whom he granted small annuities, and who on the quarter-days on which their stipends became due partook of the hospitality of his table. To such of his relations as required his assistance he was not only liberal, but so judicious in his liberalities as to supersede the necessity of their repetition. When the declining years of Dr. Johnson seemed to render travelling advisable, Dr. Brocklesby offered him a life-annuity of 100*l.* per annum; and on this being declined he made him another offer of apartments in his own house. He had left Edmund Burke a legacy of 1000*l.*; but recollecting that the legatee's death might take place (as it really did) before his own, he gave it to him in advance, *ut pignus amicitia*, and it was accepted as such by his illustrious friend.

In 1794 Dr. Brocklesby found the infirmities of age increase so fast upon him that he declined visiting patients, except among his most intimate acquaintance, and at the same time gave up his half-pay. A little before this time his patron and friend the Duke of Richmond had made him physician-general to the royal regiment of artillery and corps of engineers.

Dr. Brocklesby died on the 11th of December, 1797, in his 76th year, having returned that day from a visit to the widow of Edmund Burke, at Beaconsfield. With the exception of a few legacies, he left his fortune, which is said to have exceeded 30,000*l.*, between his two nephews, Mr. Beby and Dr. Thomas Young.

Dr. Brocklesby was a Fellow of the Royal Society, and wrote two papers in their Transactions:—'An Account of the Poisonous Root lately found mixed with Gentian' (No. 486); and 'Experiments on Cutting the Tendons in various Animals' (vol. xliii.). Besides these, and the Dissertations before mentioned, he was the author of the following:—'Eulogium Medicum, sive Oratio Anniversaria Harveiana,' &c., 4to., 1760. 'Œconomical and Medical Observations from 1738 to 1763, tending to the Improvement of Medical Hospitals,' 8vo., 1764. [The date '1738' is given both by Hutchinson and Rees—if correct, he must have begun his observations at sixteen years of age.] 'Case of a Lady labouring under a Diabetes' (Med. Observations, vol. iii.). 'Experiments relative to the Analysis and Virtues of Seltzer Water' (ibid. vol. iv.). 'Case of an Encysted Tumour in the Orbit of the Eye, cured by Messrs. Bromfield and Ingram' (ibid.). 'A Dissertation on the Music of the Antients.'

BROCOLI, in horticulture, is a plant of the cabbage tribe, producing its young flowers in very compact masses called heads, which, in consequence of their being closely enveloped by leaves, are partially blanched at the period when they are cut for table. This plant is what botanists call *Brassica oleracea Botrytis*, and differs from the other races of the same species not only in its flowers having this tendency to crowd together into fleshy heads, but also in the seeds being rather smaller. On this account it has been thought by some, as by Miller, to be a peculiar species; there does not however appear to be any proof of this opinion being correct. The brocoli, although always considered by gardeners in this country as something quite distinct from the cauliflower, is in fact nothing but a very slight variety of that form of the cabbage, and cannot be distinguished by any very precise characters: it may consequently have been brought originally from Cyprus along with the cauliflower, or have been subsequently found in the gardens of England or France. Brocoli seed is sown in open beds like other kinds of cabbage: when the seedlings have leaves an inch or two broad they are pricked out in a new bed at the distance of three or four inches from plant to plant. In a month or six weeks they become fit for taking their final station, which is to be in some rich quarter of the garden, in lines 2½ feet asunder, the plants themselves being two feet apart in the lines. Here they remain without further care. The season of the brocoli is the autumn, winter, and spring, and the plants are made to produce their flower-heads at those seasons by regulating the period at which the seed is sown. Brocolis which are intended for autumn use are sown in March or the early part of April: if for winter use, in April or the beginning of May; and if for spring use, in the end of May. There are three principal varieties of the brocoli,—the purple, the green, and the cauliflower, the last of which hardly differs from the cauliflower itself.

Like other species of brassica with woody stems the brocoli may be propagated not only by seed but by cuttings of its stem, and thus the necessity of saving the seed may be avoided. For this purpose the old stem is to be cut into truncheons, to each of which there is an eye or bud, and such truncheons are to be dried for a few days in the sun. They are then to be dibbled into the places where they are to stand, and *not* to be watered until some symptoms are exhibited of the truncheons beginning to grow. To ensure success in this operation it is only necessary that a dry day be chosen for planting, and that the soil should be light and drained.

BY, a town in the N.E. part of Galicia, lying in a plain bounded by forests to the E. and N.W., and vulet 'Sucha-mielka,' which flows N. into the Styr: the high road from Lemberg to Dubna, in Russian

Poland. In the year 1779 Brody was raised to the rank of a free town, and consequently it has its own magistrates and courts of justice. It is large, but ill built and dirty: it contains 2000 houses (mostly of wood) and about 24,000 inh., of whom above 8000 are Jews, on which account it has been nicknamed 'The German Jerusalem.' There are several squares and open spaces, the principal of which are the 'King' or Old-market, the Palace-square, and the New-market. Besides three Greek churches and a Roman Catholic church, it possesses three synagogues, a convent of the Pious Sisterhood, a large palace belonging to the Potocki family, and other handsome buildings. It has two Jewish schools, a high school, and a school for affording instruction in such subjects as are connected with trade and manufactures, to which there are attached a benevolent fund for the support of indigent pupils, and an excellent cabinet in natural and experimental philosophy; a Roman Catholic grammar-school, a seminary for female education annexed to the convent, a Jewish hospital, a Polish and a German theatre, and public baths. In a commercial point of view, Brody is the most important town in Galicia. The trade is almost exclusively in the hands of the Jews, and consists principally in the export of cattle, horses, honey, wax, tallow, isinglass, hides and skins, leather, aniseed, dried fruit, &c.; the import of jewels, pearls, colonial produce, and manufactured goods; and the transit of merchandise to Russia, Turkey, &c. There are tanneries and linen manufactures; and the fairs are well attended. About 50° 7' N. lat.; 25° 18' E. long.

BROEK, or **BROECK**, a vil. in that part of the prov. of N. Holland called Waterland, about 3 m. W. of the port of Monnikendam, and 23 m. N. of Amsterdam. Broek has obtained considerable celebrity from the neatness and cleanliness which it uniformly exhibits. The vil. is composed of lanes so narrow that no carriage can enter, and they are paved with small bricks, or clinkers of various colours, disposed in the form of mosaic. The houses, many of which are of fantastic shapes, stand each in the middle of a small garden, laid out with formality, and stocked with flowering shrubs and the choicest flowers. The houses are all painted in different colours; the order and cleanliness of the interior are answerable to their outward appearance. At the door of each house slippers are placed which every person who enters must substitute for his shoes: it is said that when the Emperors Napoleon and Alexander visited Broek they complied with this custom. Many workmen are constantly employed in cleaning and repairing the paths and buildings, to provide for which is considered a duty on the part of the proprietors, so that any one who neglects his share of the work is liable to have his name exposed on a board in the most public place in the village.

The inh. are all reputed rich, and live upon the interest of money inherited from their fathers. Some of them add to their wealth by dealing in butter and cheese produced from the fine pastures in the neighbourhood. The men seldom marry until they are near forty years of age, and still more rarely unite themselves to women under thirty or thirty-five. They live very retired lives; the principal door of the house is never opened except on the occasions of baptisms, marriages, and funerals, the inh. ordinarily passing in and out of their dwellings by the back entrance.

The inh., who are about 1200, are of the reformed religion, and their church is a fine building, with a very handsome pulpit and painted windows. The place suffered considerably in the great flood of 1825.

BROKEN-WIND is a peculiar affection of the sound or breathing of the horse, in which the expiration of the air from the lungs, occupying double the time that the inspiration of it does, requires also two efforts rapidly succeeding to each other, and attended by a slight spasmodic action, in order fully to accomplish it. Examination of the animal after death has satisfactorily explained the reason of this. Some of the air-cells, particularly round the edges of the lungs, are ruptured: they have run into one another, and irregularly-formed cavities have thus been made into which the air may easily enter, but cannot without considerable difficulty be expelled. This disease may also be recognized by a characteristic low grunting cough, likewise easily explained by this morbid structure of the lungs.

If the usual breathing has been rendered thus laborious, it is evident that the horse, without skilful management, will be utterly incapable of rapid and continued exertion. In fact, if he is but a little hurried he evinces evident dis-

dress, and, if still urged on, he drops and dies: this therefore is one of the worst species of *unsoundness*.

The cause of the rupture of the air-cells may be previous inflammation of the lungs, by which a portion of them has been rendered impervious, and thus greater labour thrown on the remaining parts. The delicate structure of the cells, probably weakened by the inflammation in which it had shared, yields to the unnatural distension to which they are thus exposed. Many a horse has become broken-winded when urged to extra exertion immediately after he has been fed; for the air rushing violently into the lungs in the act of sudden and forcible inspiration, and the full stomach lying against the diaphragm, with which the body of the lungs is in contact, their perfect expansion is prevented, and those parts of them, the edges, which are free from this pressure, are unnaturally dilated and ruptured. The kind of food also to which the horse is accustomed has much to do with this disease. If it is comparatively innutritive, a greater bulk of it must be eaten, and the distended stomach will oftener and longer press upon the diaphragm and impede the dilatation of the lungs, or render it unequal in different parts. Thus broken-wind is a disease of the farmer's horse fed too much on hay or chaff; it is often produced in the straw-yard, where little more than the coarsest food is allowed: but it is comparatively seldom seen in the stable of the coach-proprietor, in which the food is of a better quality, and lies in a smaller compass, and is more regularly administered; and it never disgraces the hunting or racing stable. It must however be confessed that there is sometimes an hereditary predisposition to this disease, consisting in a narrowness of chest or a weakness of structure in the lungs.

There is no cure for broken-wind; no art can restore the dilated cells to their former dimensions, or build up again a wall between them. But palliative measures may be adopted to a very considerable extent. The food should be of a more nutritive kind, and lying in a smaller compass. Straw and chaff should be forbidden, the quantity of hay perhaps a little diminished, and that of corn correspondingly increased. A mash should constitute a part of the evening's fare; water should be sparingly given during the day, and exercise should not be required when the stomach is full. Occasional or periodical fits of greater difficulty of breathing should be met by small bleedings and gentle laxatives. By this management not only will the broken-winded horse be rendered useful for many ordinary purposes, but will be capable of service and labour, which it would otherwise be cruel to require of him.

BROKER, a person employed in the negotiation and arrangement of mercantile transactions between other parties, generally engaged in the interest of one of the principals, either the buyer or the seller, but sometimes acting as the agent of both. As it usually happens that individual brokers apply themselves to negotiations for the purchase and sale of some particular article or class of articles, they by that means acquire an intimate knowledge of the qualities and market value of the goods in which they deal, and obtain an acquaintance with the sellers and buyers as well as with the state of supply and demand, and are thus enabled to bring the dealers together and to negotiate between them on terms equitable for both. A merchant who trades in a great variety of goods and products drawn from different countries, and destined for the use of different classes, cannot have the same intimate knowledge for his guidance, and will consequently find it advantageous to employ several brokers to assist him in making his purchases and sales.

Ship-brokers form an important class in all great mercantile ports. It is their business to procure goods on freight or a charter for ships outward bound; to go through the formalities of entering and clearing vessels at the Custom House; to collect the freight on the goods which vessels bring into the port, and generally to take an active part in the management of all business matters occurring between the owners of the vessels and the merchants, whether shippers or consignees of the goods which they carry. In the principal ports of this kingdom almost all ship-brokers are insurance-brokers also, in which capacity they procure the names of underwriters to policies of insurance, settling with the latter the rate of premium and the various conditions under which they engage to take the risk, and receiving from them the amount of their respective subscriptions in the event of loss. Should this loss be partial, it becomes the duty of the broker to arrange the proportions to be reco-

vered from the underwriters. The business of an insurance-broker differs from that of other brokers in one particular. The latter, when they give up the name of the party for whom they act, incur no responsibility as to the fulfilment of the conditions of the contract, while an insurance-broker is in all cases personally liable to the underwriters for the amount of the premiums. He does not, on the other hand, incur any liability to make good the amount insured to the owner of the ship or goods, who must look to the underwriter alone for indemnification in case of loss. Under these circumstances, it is the duty of the insurance-broker to make a prudent selection of underwriters. Merchants frequently act as insurance-brokers.

Exchange-brokers negotiate the purchase and sale of bills of exchange drawn upon foreign countries, for which business they should have a knowledge of the actual rates of exchange current between their own and every other country, and should keep themselves acquainted with circumstances by which those rates are liable to be raised or depressed; and they should besides acquire such a general knowledge of the transactions and credit of the merchants whose bills they buy, as may serve to keep their employers from incurring undue risks. Persons of this class are sometimes called bill-brokers, a title which is likewise given to another class whose business it is to employ the spare money of bankers and capitalists in discounting bills of exchange having some time to run before they will become due.

The business of a stock-broker is that of buying and selling, for the account of others, stock in the public funds, and shares in the capitals of joint-stock companies. The acts of parliament, by which the proceedings of stock-brokers should in certain cases be regulated (7 Geo. II. cap. 8, and 10 Geo. II. cap. 8), have long been dead letters. Under these enactments every bargain or contract for the purchase and sale of stock which is not made *bond fide* for that purpose, but is entered into as a speculation upon the fluctuations of the market, is declared void, and all parties engaging in the same are liable to a penalty of 500*l.* for each transaction.

Every person desirous of acting as a broker for the purchase and sale of goods within the city of London must be licensed for that purpose by the lord mayor and court of aldermen. When admitted, the broker must give bond, conditioned with a penalty of 500*l.*, for the faithful discharge of his duties, without fraud or collusion, and to the utmost of his skill and knowledge. He is sworn to this effect, and further binds himself not to deal in goods upon his own account—a stipulation which is very commonly broken. It is the indispensable duty of a broker to keep a book in which all the contracts which he makes must be entered, and this book may be called for and received as evidence of transactions when questioned in courts of law. Each broker pays on admission a fee of 5*l.*, and an equal sum annually so long as he continues to act under his license: any person acting as a broker without having procured a license or paid the fees, is liable to a fine of 100*l.* for every bargain which he may negotiate.

It is usual to apply the name of broker to persons who buy and sell second-hand household furniture, although such an occupation does not bear any analogy to brokerage as here described, furniture dealers buying and selling generally on their own account and not as agents for others. These persons do indeed sometimes superadd to their business the appraising of goods and the sale of them by public auction under warrants of distress for rent, for the performance of which functions they must provide themselves with an excise license, and they come under the regulations of an act of parliament (57 Geo. III. c. 93).

The business of a pawn-broker is altogether different from that of the commercial brokers here described. [**PAWN-BROKER.**]

BROMBERG, a government circle forming the northern half of the Prussian prov. of Posen, bounded on the S.E. by the kingdom of Poland, and on the N.E., N., and N.W. by western Prussia, and containing an area of about 4490 sq. m., with a pop. of about 327,000, of whom about 200,000 are Roman Catholics, and 21,000 Jews. It contains nine minor circles, 54 towns, and 2328 villas, hamlets and colonies. It is a level country, fertile in parts, and full of forests, particularly in its eastern district between the Vistula and Netze. It produces most kinds of grain, potatoes, fruits and vegetables; much timber is felled, and considerable quantities of horses (in 1831 about 44,000), horned cattle (about

136,000), sheep (about 600,000), and other domestic animals are reared. The manufactures consist of woollens, linens, leather, spirits, lace, paper, saltpetre, tobacco, &c.

Bromberg, also the name of one of the nine minor circles, lies adjacent to Western Prussia in the N. and E., and contains about 567 sq. m., with about 41,000 inh. The capital of both of these circles bears the same name in German, but in Polish it is called 'Bydgoszcz.' It is situated about 5 m. W. of the Vistula on an eminence, the base of which is watered by the Brahe. The town is built on the banks of the last-mentioned riv., which is a navigable stream, and falls into the Vistula about 5 m. below the town. The Bromberg canal, about 18 m. in length, which unites the Brahe and Vistula with the Netze, passes through Bromberg. The number of houses is about 610, and the pop. amounts to about 6800. Bromberg is well built, has two suburbs, and contains three churches, a monastery, and a convent, a gymnasium, a seminary for educating teachers, and two other schools, one of them for poor children; an infirmary, a house of correction, two hospitals, and a royal granary and depôt for iron. Among other manufactures Bromberg has a large sugar refinery, two tobacco manufactories, several flour and oil-crushing mills, some potteries, and lime-kilns, &c. The export of its manufactures, together with a brisk trade in grain, cattle, &c., and the transit of merchandise, afford constant employment to the inh. 53° 7' N. lat. 18° 2' E. long., and about 220 m. N.E. of Berlin.

BROME-GRASS, the name of various species of true grasses belonging to the genus *Bromus*. They are known by having their spikelets many-flowered, two awnless glumes, to each floret two paleæ or valves, the lowermost of which has a rough, straight, rigid awn proceeding from below the tip of the valve. The species are common annuals in fields, hedgerows, and dry, sterile places. None are of any value to the farmer. The distinctions of the species will be found in any British Flora.

BROMELIA'CEÆ, a natural order of endogenous plants, taking its name from the genus to which the pineapple was once incorrectly referred [*ANANASSA*], and consisting of herbaceous plants, remarkable for the hardness and dryness of their gray foliage. They occur in great abundance in the tropical parts of the new world, or in such extra-tropical countries as, owing to local circumstances, have a climate of a tropical nature. Sometimes they are found growing on the earth in forests, but more commonly they spring up from the branches of trees, round which they coil their simple, succulent roots, vegetating upon the decayed matter there they may find, and absorbing their food in a great measure from the atmosphere. Their leaves are always packed together so very closely at the base as to form a kind of cup in which water collects; so that the traveller who ascends the trees on which they grow, if he upsets one of these plants, as he easily may, is unexpectedly deluged by a shower, the source of which he would not have suspected. The flowers of most are pretty, and of some of them remarkably handsome and sweet-scented; but the fruit is in no case of any value except in the genus *Ananassa*. Bromeliaceæ may be shortly described as scurfy-leaved, hexandrous endogens, with distinct calyx and corolla, an inferior ovary, and seeds whose embryo lies in menly albumen. They are known from *Amaryllidaceæ* by the latter circumstance, by their hard scurfy leaves, and epiphytal habit; from *Burmanniaceæ*, by their leaves not being equitant nor their fruit winged; and from *Taccaceæ* by all their habit and their fruit being three-celled, with central placentæ.

With the exception of the pine-apple, so well known as a valuable fruit, and of certain species of *Tillandsia*, whose dry, elastic leaves render them fit for stuffing mattresses and the like, Bromeliaceæ are of no known value. Many species are cultivated in the hot-houses of this country, the most beautiful of which belong to the genera *Bromelia* and *Billbergia*: they all grow readily in decayed tan. No species has been yet seen wild in any part of the old world.

BROMINE, an elementary fluid body, discovered, in 1826, by M. Balard, a distinguished French chemist. The name of this substance is given to it from *βρῶμος* (*bromos*), a stink or strong smell, on account of its powerful and disagreeable odour: it was first procured by its discoverer from the mother water or bitter remaining after the crystallization of common salt at the salt-works of Montpellier. It soon afterwards found in sea-water in the state of bromide of magnesium, and has since been met with in various rings, and especially those of Germany. At Theodors-

halle, near Kreuznach, it is found in sufficient quantity to be extracted with advantage, 100 avoirdupois pounds of the water yielding 2 ounces and 80 grains of bromine. Dr. Daubeny has detected bromine in several mineral springs in England, and he states that it occurs in most of those that yield much common salt, except that of Droitwich in Worcestershire. Balard has also found that it exists in marine plants growing on the shores of the Mediterranean, in the ashes of sea-weeds that furnish iodine, and in those of some animals, especially of the *Ianthina violacea*, one of the *utacoseæ* mollusca.

Balard obtained bromine by the following process: into a bottle two-thirds filled with bitter he passed a current of chlorine gas; this decomposed the salt of bromine contained in it, and set the bromine at liberty. He then filled the bottle with sulphuric æther, which dissolved the bromine, and became of a fine hyacinthine-red colour; this was decanted and shaken with a solution of potash, which combined with the bromine; the solution of bromide of potassium thus obtained yielded by evaporation cubic crystals of the salt; these were powdered and mixed with peroxide of manganese and sulphuric acid diluted with half its weight of water; the bromine evolved by this process was received in a vessel of cold water which condensed it. More economical processes have since been adopted, but this is sufficient to explain the principle.

Bromine has the following properties: it is liquid at the usual temperature of the air. Its specific gravity is 2.96. It is poisonous. In considerable bulk, its colour is a deep brownish red; in small quantities it is of a hyacinthine red. Its odour is extremely strong, greatly resembling that of chlorine; its taste is disagreeable. When exposed to a temperature between zero and 4° of Fahrenheit, it becomes solid, crystalline, brittle, and hard enough to be powdered. It boils at about 116° Fahrenheit, and its volatility is great, for at common temperatures it emits a red vapour resembling that of nitrous acid. The density of this vapour is about 5.400, and 100 cubic inches weigh about 167.4 grains.

Bromine suffers no change by the agency of light, heat, or electricity, and having never been decomposed, it is regarded as an elementary or simple substance. In the decomposition of its compounds by electricity, it is evolved at the positive wire, and consequently resembles in this respect oxygen, chlorine, and iodine, and is like them also in being, when vaporized, a powerful supporter of combustion, some substances burning in it as in chlorine gas: its vapour extinguishes a taper; it is soluble in water and alcohol, and especially in æther; it resembles chlorine in destroying vegetable colour. It is very corrosive, acting upon and destroying organic matter with great energy. It renders a solution of starch yellow.

Oxygen and bromine form only one compound, which is *Bromic acid*. These elements do not combine directly, but only when exposed to each other in their nascent state. When, for example, bromine is combined with potash, there are formed bromate of potash and bromide of potassium; and when in the same way there are formed bromate of barytes and bromide of barium, the bromate treated with sulphuric acid yields bromic acid and sulphate of barytes; and the aqueous solution of the acid being slowly evaporated is converted into a fluid of the consistence of a syrup: if the evaporation is carried farther, one part of the acid is volatilized, and another decomposed into bromine and oxygen.

Bromic acid has a scarcely sensible smell. Its taste is sharp, but not caustic. It first reddens, and then destroys the colour of litmus paper. Sulphurous and phosphorous acids and the hydracids decompose bromic acid, and set the bromine free. Sulphuric acid also partly decomposes it into oxygen and bromine, because it absorbs the water. Bromic acid is composed of

Eight equivalents of oxygen	8 × 5 = 40
One equivalent of bromine	79

Equivalent . . . 119

Azote and Bromine.—No compound of these is known.

Hydrogen and Bromine combine to form

Hydrobromic acid: this compound is obtained with difficulty by direct action, but at a high temperature these elements slowly unite. Hydrobromic acid may be procured by distilling bromide of potassium with concentrated sulphuric acid; the product is mixed however with bromine and sulphurous acid, because the hydrogen of the hydrobromic

acid decomposes a portion of the sulphuric acid. The best method is to mix bromine and phosphorus and a little water; there is produced by their action bromide, or perbromide of phosphorus, which decomposes water, and evolves hydrobromic acid gas, which may be procured in the gaseous state over mercury, or dissolved in water.

Hydrobromic acid gas is colourless, and forms a thick vapour on coming into the air. Its smell resembles that of muriatic acid; its specific gravity, according to Berzelius, is 2.731; 100 cubic inches consequently weigh 84.72 grains. It acts upon the metals and their oxides precisely in the same way as muriatic acid gas. It is not altered by being passed through a red hot tube, either alone or mixed with oxygen gas. Chlorine separates the bromine from it, and muriatic acid is formed. Hydrobromic acid gas is very soluble in water, and the solution has a greater specific gravity than liquid muriatic acid; it is colourless, strongly acid, and suffers no change by exposure to the air. Nitric acid decomposes it, and an *aqua regia* is formed, which dissolves gold and platina.

Hydrobromic acid is composed of

One equiv. of hydrogen	=	1
One „ bromine	=	79
		—

Equivalent . . . 80

When it is decomposed by potassium, hydrogen gas, equal to half the volume of the acid submitted to experiment, remains, and bromide of potassium is formed.

Chlorine and Bromine form chloride of bromine. It is prepared by passing a current of chlorine gas over bromine, and condensing the vapour arising by a freezing mixture. It is liquid, has a reddish-yellow colour, lighter than that of bromine. It has a strong, unpleasant smell, and its taste is extremely disagreeable. It is volatile, and soluble in water: the solution possesses bleaching power. It does not possess acid properties, but when mixed with the alkalis forms chlorides and bromides. It has not yet been analysed.

Carbon and Bromine form a liquid bromide of carbon. It is prepared by the action of iodide of carbon upon bromine. It is a colourless liquid which has an ethereal and penetrating smell, and it communicates to water an exceedingly sweet taste. It is heavier than water, and becomes solid by exposure to about 45° of Fahrenheit. It is decomposed by heat, vapour of bromine being evolved. It has not been analysed.

Sulphur and Bromine.—These substances combine readily by mere mixture; the resulting bromide is fluid, has an oily appearance and reddish tint. It emits white vapours when exposed to the air. When moist it reddens litmus paper strongly, but slightly when dry. Boiling water is decomposed by bromide of sulphur, and there are produced hydrobromic, hydrosulphuric, and sulphuric acids. Its composition is unknown.

Phosphorus and bromine combine readily to form two compounds; the protobromide is liquid, and the perbromide is solid. The protobromide is composed of one equivalent of bromine 79, and one of phosphorus 16 = 85. Both bromides are prepared by mixing these elements in a flask containing carbonic acid gas: action takes place, with evolution of light and heat, and there are formed the solid protobromide which sublimes in the upper part of the flask, while the fluid perbromide remains in the lower part. Its composition is not certainly known.

The perbromide is of a yellow colour; by heat it becomes red. It decomposes water, and there are formed hydrobromic and sulphuric acids.

Bromine and iodine form probably two bromides of iodine; the protobromide, or that so considered, is a solid compound, which is by heat convertible into a reddish-brown vapour, condensing into small crystals of the same colour, resembling fern leaves in appearance.

When bromine is added to the above described crystals a liquid is formed, which unites with water and gives a solution possessing bleaching power. It is probably the perbromide of iodine.

We have now mentioned the principal binary compounds of bromine, except those which contain a metal: for these as well as for an account of the bromates which their oxides form with bromic acid, we refer to each particular metal.

But little use has been hitherto made of bromine; the bromide of potassium has however, been employed in medicine.

BROMLEY. [Kent.]

BROMLEY ST. LEONARDS, a par. in the hund. of Ossulstone, Tower division, Middlesex, adjoining Stratford-le-bow, 2 m. from Whitechapel Church. In 1831 it contained 2350 males and 2496 females. A considerable number of its labouring pop. are employed in the East and West India Wet Docks and other adjacent dock-yards. The area of the par. is 620 English statute acres.

At this place was a nunnery of the Benedictine order dedicated to St. Leonard, founded in the reign of William the Conqueror by William bishop of London for a prioress and nine nuns. The only remains of this building is the chapel of St. Mary, now the par. church. The living is a donative: its gross annual income is 190*l.* There are four daily schools in the par., one of which is endowed by Sir John Jolles with a portion of the rents of five houses in London; and a Sunday school, which is endowed with 1400*l.* 3 per cents., devised to the minister and two trustees, from the interest of which the minister is paid 20*l.* per annum to catechize the children once a month and for an annual examination: this school is not limited in number; any child in the par. has the privilege of attending.

In the reign of Edward I. Idonea Cricket held certain lands here valued at 60*s.* per annum by the service of holding the king's napkin at the coronation. After her death they were divided between the nuns of St. Leonard's, the brethren of the Holy Trinity, and others.

(*Lyson's Environs of London; Ecc., Pop., and Educ. Returns.*)

BROMSGROVE or **BROOMSGROVE**, antiently Bremsgrove, a m. t. in Worcestershire, situated near the small riv. Salwarp, and on the direct road from Birmingham to Bristol, 13 m. from Birmingham, 13 N.N.E. from Worcester, and 118 N.W. from London. The town consists principally of one good street, a mile in length, paved, and lighted by gas. It contains one church, and three dissenting places of worship, a market-house, a grammar-school, and a court for the recovery of small debts. The market is on Tuesday, and, together with two annual fairs, held on the 24th of June and on the 1st of October, was granted to the inh. by King John.

The pop. of the par. of Bromsgrove amounted, according to the last census, to 8612; that of the town is about 5000. It was formerly governed by a corporation, but there are now neither recorder nor aldermen, and the only office of the bailiff is that of collecting the dues belonging to the lord of the manor. This place was also formerly a bor., and in the reign of Edward I. returned two members to parliament; but when the trade of the town declined, the inh. were, on their own petition, freed from that 'burden:' it is now comprised in the E. division of the county.

The church, dedicated to St. John the Baptist, is situated on a gentle eminence; its tower and spire, together 189 ft. in height, are perhaps the most beautiful in the co. There was a church at Bromsgrove at the time of the Conquest. The patronage of the rec. was vested in the crown till the reign of Henry III., by whom it was conferred on the prior of Worcester; the bishop of the diocese confirmed the king's gift, and instituted a vic.: the dean and chapter are the present patrons. The grammar-school was founded by Edward VI., who endowed it with 7*l.* per annum; the income was augmented by Sir T. Cooke, who died in 1701, by 50*l.* a year. Twelve boys on the foundation are educated, clothed, and apprenticed; and in Worcester College, Oxford, are six scholarships and six fellowships, the vacancies in which are filled up by boys selected from this school.

At Shipley appears the Ikineld Street, which leaving Warwickshire at Beoley, re-enters that co. at Edgbaston, near Birmingham.

The linen manufacture was formerly carried on to a considerable extent, but has been entirely abandoned. Nail-making is now the principal trade, but there is also an extensive manufactory for patent buttons. At this place the successful cultivation of the apple for cider may be considered as terminating: farther N. the spring frosts rendering the produce uncertain.

A singular circumstance occurred at Bromsgrove, a few years since, in four children being born at one birth, all of whom, together with the mother, survived.

It is generally but incorrectly asserted in topographical accounts of Bromsgrove, that coal and limestone occur in the par., and that a singular petrifying spring exists in the neighbourhood.

Bromsgrove is situated in a highly-cultivated and richly-wooded valley. On the Lickey Hill, which forms one of its acclivities, are the sources of the riv. Rea, which flows through Birmingham; of the Salwarp, which passes through Droitwich; of the Arrow, and of several small streams, some of which fall into the basin of the Severn and ultimately into the Irish channel, while others descend in the opposite direction to the basin of the Trent and the German Ocean. The strata belong to the new red sandstone formation. The Lickey is composed of quartz, and must at some period have been an immense mountain; for it is considered by geologists as the source from whence have been derived the vast beds of gravel which extend through Oxfordshire, in the valley of the Evenlode, and even along the Thames.

At Hanbury, just without the confines of the par., Saurian remains are found imbedded in the lias, and at Stoke Prior commences red and green marl, traversed by veins of gypsum.

In the par. of Stoke Prior, and closely adjoining that of Bromsgrove, are situated the extensive salt and alkali works carried on by the British Alkali Company. As this establishment furnishes an instance of the rapid introduction of a manufacture into a district which had been previously confined to agriculture, a short notice of its progress may be interesting. The manufacture of salt has been carried on for centuries in the adjoining bor. of Droitwich, where it is prepared from rich springs of native brine. The only situations where rock-salt had been met with in this isl. were in Cheshire, previously to its being discovered at Stoke Prior, where it was obtained in 1829, in the course of sinking a pit in search of brine. The beds of salt were of great thickness, and were excavated to a considerable extent; but at present the supplies for making refined salt are derived from a natural brine spring, which has communicated with the excavations. Immediately after making this discovery, the proprietors erected extensive works for the manufacture of salt, and for the preparation of British alkali, by the decomposition of this substance, which very speedily changed the green fields and retired lanes into an active manufactory and a lively village. The beneficial effects of this introduction of an extensive manufacture commence with an immediate demand for the surplus labourers, an increased consumption of the necessaries of life, and a contribution towards meeting the parochial expenditure; the neighbouring agriculturist finds his burdens relieved, at the same time that a market for his productions is brought into his immediate neighbourhood. A dispassionate view of instances such as the present would tend greatly to subdue the feeling of jealousy which exists between the agricultural and manufacturing interests in this kingdom. The benefits derived from the successful establishment of a manufacture is not confined to the labouring pop., and to occupiers of land in its vicinity alone, but extends more widely: thus, in the present instance, these works being situated on the banks of the Birmingham and Worcester Canal occasioned, on their being fully established, an increase in the value of that property to the extent of 70 per cent.; and the influence they are likely to produce in the rising port of Gloucester, by furnishing to it a large supply of salt for exportation, is calculated to be very considerable. (*Communication from Bromsgrove.*)

BROMWICH, WEST. [WEST BROMWICH.]

BRONCHITIS, inflammation of the bronchi, that is, the tubes which convey air to the lungs. The respiratory organs consist of the windpipe, or the air-tube; of clusters of minute bags called air-cells, which constitute the proper substance of the lungs, and of a delicate but firm membrane which encloses the lungs, as in a sheath, termed the pleura. Each of these component parts of the respiratory apparatus is subject to its own peculiar diseases. Hence the diseases of the respiratory organs are arranged into three classes: first, into those which affect the air-tube; secondly, into those which affect the proper substance of the lung; and, thirdly, into those which affect its investing membrane, the pleura.

The air-tube or windpipe is divided into several portions. Each of these portions possesses a peculiar structure, and performs a specific function. Of these divisions the first is termed the larynx, which constitutes the principal organ of the voice, and is situated at the upper part of the neck. Immediately continuous with the larynx is a large tube called the trachea, situated at the fore part of the neck.

Opposite the third vertebra of the back the trachea divides into two great branches, named the bronchi, one branch for each lung; the right bronchus going to the right lung, and the left bronchus to the left lung.

Each of the bronchi at the place where it enters the lung, subdivides into several branches which penetrate the substance of the lung, where they again divide, subdivide, and spread out after the manner of the branching of a tree. Successively diminishing in size as they subdivide, the bronchi at length form an infinite number of minute tubes which at their ultimate terminations dilate into the little bags termed the air-cells of the lungs. The larynx, the trachea, the bronchi and their ramifications, together with the cavities of the nose, the mouth, and the pharynx, are all classed together under the common name of the air-passages. All these parts are lined by a membrane, which from the nature of its secretion is termed mucous membrane. In every part of the body the mucous membrane possesses the same essential structure, and is subject to analogous diseases. Accordingly, although the structure of the mucous membrane of the air-passages is somewhat modified in the nose, in the fauces, in the larynx, in the trachea, in the bronchi, and in the air-cells, according to the different functions which it has to perform in these different organs, yet as it possesses in its whole extent the same essential organic characters, so the diseases to which it is subject are perfectly similar. All these diseases may be included under congestion, inflammation, hæmorrhage (effusion of blood from its surface), emphysema (the distention of the tubes), and polypi (concretions growing from its surface, which obstruct and sometimes nearly obliterate the tubes).

Of these diseases inflammation is by far the most common and the most important. Inflammation of the mucous membrane of the air-passages is divided into species according to the nature of the secretion in which the inflammatory action terminates. Thus the inflammation may terminate in a secretion which does not congregate after its formation; this is termed *catarrhal* inflammation. It may terminate in a secretion which instantly concretes as it is formed; this is called *plastic* inflammation or *croup*: it may terminate in the destruction of the mucous membrane and the formation of ulcers; this is termed *ulcerous* inflammation.

Catarrhal inflammation, or that in which the inflammatory action produces a secretion which does not congregate, is again subdivided principally according to the colour and consistence of the matter secreted. If the secretion be of a yellow colour, and not tenacious, the disease is called *serous catarrh*; if the secretion be transparent and viscid, the disease is termed *pituitous catarrh*. When the inflammation is confined, as it often is, to that portion of the membrane which lines the nose, it constitutes the disease commonly known under the name of *cold* or *catarrh*; its technical name of which is *coryza*. When the inflammation extends to the mucous membrane which lines the fauces, tonsils, and pharynx, the disease is called *coryza tonsillaris* and *pharyngea*. When the inflammation is seated in that portion of the mucous membrane which lines the larynx, the disease is called *laryngitis*: when it affects the mucous membrane of the bronchial tubes and their ramifications, it constitutes the disease termed *bronchitis*.

While a common function is performed by the air-passages from its commencement at the mouth and nostrils to its termination in the air-cells, namely, the transmission of air to and from the lungs, additional and very different functions are performed by the several portions of this extensive tube. Accordingly inflammation of the membrane which lines it produces widely different effects, according to the portion of the membrane in which the disease is seated, giving rise to the distinct forms of disease just enumerated. The description of these several diseases is given under their respective names; the disease named bronchitis is that at present to be treated of.

Medical writers distinguish between what they term a state of congestion and that of inflammation. In congestion the blood-vessels are merely loaded with a preternatural quantity of blood; in inflammation the blood-vessels, besides being loaded with a preternatural quantity of blood, are in a state of diseased action, which, without a precise knowledge having been acquired of the nature of that action, is termed inflammatory. Simple congestion

the mucous membrane of the bronchi is a frequent affection, which may be induced by any cause that impedes the return of the blood to the left side of the heart. If suddenly and intensely produced, which sometimes though rarely happens, it may prove fatal with all the symptoms of asphyxia [ASPHYXIA]. Several cases are on record in which persons were seized suddenly, without any apparent cause, with extreme difficulty of breathing, which progressively increased until it terminated in death; and on the examination of the body, no morbid appearance could be detected, excepting a general congestion of blood in the capillary vessels of the mucous membrane, of the bronchi and its ramifications. In a slighter form, congestion of the mucous membrane of the bronchi is a constant attendant on various diseases, more especially fever of every type, whether common continued fever, or typhus, or scarlet fever, or measles, or small-pox. In the state of congestion the mucous membrane is preternaturally red, the tinge of colour varying according to the intensity of the affection from a pale to a brownish or purplish red.

When the mucous membrane of the bronchi is in a state of active inflammation, it is of a bright red or crimson colour. This inflammatory redness may be partial or general; but it more commonly affects particular parts of the membrane than its entire surface. Sometimes the redness is confined to the larger bronchial tubes, or it may be limited to the smaller. Sometimes it exists in the bronchus of one side only; at other times it equally affects both bronchi.

Two consequences result from the congestion and inflammation of the membrane: first, the swelling and thickening of the membrane, in proportion to which must of course be an obstruction to the passage of the air; and, secondly, an increase in the quantity of its mucous secretion. This increase and change in the secretion are chiefly the result of inflammation, in some cases of which affection the secretion becomes so excessive as completely to fill up the bronchial tubes, and thereby to occasion suffocation.

The trachea and the bronchial tubes being mere conduits of air, the disturbance of function produced by the inflammation of this portion of the air-passage must of course relate chiefly to impeded transmission of the air. Accordingly difficulty of breathing is the most prominent symptom of inflammation seated in this portion of the air-tube. This difficulty of breathing is proportionate to the obstruction to the passage of the air, which is proportionate to the degree of the swelling of the membrane, and to the extent of membrane involved in the inflammatory affection. If the inflammation be limited to a portion only of a single tube, the difficulty of breathing will not be great; if it affect the whole tubes of one side, the difficulty of breathing will be considerable; if it affect all the tubes of both lungs, the difficulty of breathing may be so great as to prove fatal. Together with impeded respiration, there is a feeling of tightness and oppression across the chest, accompanied with a sense of heat, sometimes amounting to a burning sensation, often referred by the patient to the sternum. Cough is always present. The cough at first is dry, because the membrane is dry; but the secretion soon becomes more abundant than natural. The matter first secreted is acrid; and this acridness diminishes as the quantity of the secretion increases; and when the matter secreted assumes a yellow colour, it is always quite bland; and then the cough is loose and the expectoration free.

When the inflammation is seated in the mucous membrane that lines the cavities of the nose and pharynx, the morbid changes which the membrane undergoes during this process are in some degree manifest to the eye. It is obvious that the part affected becomes redder than natural; that its blood-vessels appear larger, more numerous, and more turgid with blood; at the same time the membrane swells and becomes thicker and firmer than natural. At first it is perfectly dry; for the first effect of the state of inflammation is the suppression of secretion: but soon a transparent, thin and acrid fluid is poured out by the inflamed vessels, which irritates and even excoriates all the parts with which it comes in contact. After flowing for a certain time, varying from a few hours to two or three days, according to the intensity of the disease, this morbid secretion changes its character, loses its acrid nature and becomes more bland, but still remains transparent. In an indefinite time, in general in two or three days, still further changes take place; its bland character remains, but its colour is

altered; it gradually assumes a greenish tint; it then passes to yellow, and finally becomes of a bright brimstone hue. As the disease proceeds the condition of the membrane is changed; for as the bland fluid is formed the morbid thickness and firmness of the membrane diminishes, and it gradually returns to its healthy condition.

The redness, swelling, and firmness of the membrane, together with its altered secretions, are then local signs visible to the eye which denote the inflammatory condition of the membrane in coryza and in cynanche tonsillaris, and pharyngea. The membrane being in part manifest to our senses in the situations in which these diseases have their seat, we can observe the morbid process that goes on, and mark its different stages. It is probable that a perfectly analogous process goes on when portions of this membrane which are placed beyond our view are inflamed. When the inflammation is seated in the larynx the membrane cannot be seen. That the particular portion of the membrane which lines the larynx is in a state of inflammation is a matter of inference derived from the disturbance of the function of the organ, namely, the function which relates to the formation of the voice. But when inflammation descends further into the trachea, the bronchial tubes and their ramifications, not only are we altogether unable to see the condition of the membrane, but as the functions of those tubes are so simplified as to be mere conduits of air, the only indication we can obtain that they are in a state of disease must arise from the disturbance of that single function, namely, difficulty of breathing. Certainly there will be combined two other symptoms, namely, cough and expectoration; but these are common to various other diseases of the lungs, and consequently cannot be diagnostic, that is, distinctive: while difficulty of breathing is common to every disease of the lungs and heart which has arrived at a certain degree of intensity. When inflammation is seated in these distant portions of the mucous membrane of the air-passages, it is impossible to arrive at any certain knowledge of the specific disease from the symptoms or the signs of disordered function only.

One of the most brilliant achievements of modern science, the honour of which is due to Lænnec, is the discovery of a series of local signs by which inflammation of the bronchial tubes, placed as they are deep in the cavity of the chest, is rendered almost as evident as any external disease of the body; this remarkable man having brought completely within the cognizance of the ear what the eye could never have seen, nor the sense of touch have reached.

It has been shown that inflammation of the mucous membrane of the air-passages has two consequences, first, a swelling of the membrane, and secondly, a change of its secretions; the local signs by which the inflammation of the bronchi and of their ramifications is ascertained and discriminated from all other diseases, have reference to these two conditions.

When the inflammation of the mucous membrane of the bronchial tubes is considerable, the swelling of the membrane may be so great as completely to close that portion of the tube in which the inflammation is seated. The consequence must be that the respiratory murmur [AUSCULTATION] cannot be heard in that portion of the lung which the tube supplies, since no air can pass the obstructed point; accordingly, on applying the ear, or the stethoscope [STETHOSCOPE] to the chest it is found, especially in severe affections of this kind, that the respiratory murmur is absent in various portions of the lungs. This absence of the respiratory murmur is however common to several other affections of the lungs. Hence percussion must be called to the aid of auscultation. By striking the chest [PERCUSSION] it is found that the sound elicited is natural in bronchitis, while in almost every other affection of the lungs it is dull where there is no respiratory murmur. The reason of this difference is, that in bronchitis the cells are filled with air, so that a natural sound is elicited by percussion; but the obstruction occasioned by the swelling of the inflamed membrane confines and prevents the renewal of the air, and consequently the respiratory murmur is lost; while in other affections attended by absence of the respiratory murmur the air-cells are impermeable, either from their consolidation or compression, and then the sound, on percussion, is invariably dull and fleshy. If on the other hand the inflamed membrane be not so much swollen as completely to close the tube, then another and a totally distinct sound is produced—a whistling sound, a sound always

observed to accompany an indistinct respiratory murmur, on account of the diminished calibre of the bronchial tube.

Moreover, when the swelling of the membrane diminishes, the nature of the sound is again entirely changed. It now becomes a loud, deep, and sonorous wheezing, the intensity of which is sufficient to cause a vibration upon the parietes of the chest, distinguishable by the hand; at the same time the respiratory murmur becomes more distinct, denoting that the bronchial tubes are more open; finally, the deep sonorous wheeze assumes a still deeper bass, merges into the respiratory murmur, mixes with it, and gives it a roughness which is termed *rough respiration*.

On the other hand, where the secretion re-appears and is in excess, a wheezing sound is produced, which is loud and noisy in proportion to the quantity of fluid poured into the tubes. This sound, when it is formed in the trachea, can be heard through the medium of the air alone; but the application of the stethoscope, or the ear, to the surface of the chest is necessary when it is formed in the bronchial tubes.

By these local signs it is possible to decide at once whether the disease in question be bronchitis or not; it is possible to determine the exact extent of the affection; for the wheezing may be heard only in a single line, as if in the direction of a single bronchial tube, or it may be heard all over one lung, and occasionally over both; and by judging of the distance of the sound from the ear, it is possible to tell whether the bronchial tube affected be in the centre of the organ or at its surface. In this manner we are taught the nature and intensity of the disease by the kind of sound induced in the morbid condition of the organ.

Besides these local signs or symptoms derived from the altered condition of the immediate seat of the disease, there are others derived from the disturbance of the system in general, termed *general signs*. These symptoms of a disordered state of the system in general are all those which belong to the disease termed *FEVER*. Whenever any organ of the body is affected with any disease of a certain degree of intensity, in addition to the disordered function of that particular organ, the natural functions of the great and general systems, such as the nervous, the circulating, the digestive, and so on, become disturbed. The disturbance of these general systems is always of a certain kind, and takes place in a certain order, giving rise, as has been just stated, to the train of symptoms which constitute fever. The fever thus induced is not a primary disease, it is occasioned by the sympathy of the system with the disease of some particular organ: this secondary form of fever is called *sympathetic* or *symptomatic*, in contradistinction to fever when it is the original and essential disease, which is termed *idiopathic* [*FEVER*]. The general or feverish symptoms are lassitude, indisposition to motion, chilliness, often amounting to shivering, pains in the limbs, and more especially in the back and loins; dullness and heaviness of the mind, or inability to carry on the intellectual operations with the usual vigour. The pulse is rapid and weak, and the urine scanty and limpid. These symptoms are soon followed by irregular flushes of heat, sometimes occurring at one part of the body, sometimes at another, alternating with the cold and intermingling with it, so that the patient feels frequently, in consequence of the rapidity of these changes, the two different sensations in the same place and almost at the same instant. The skin at length becomes universally hot, and commonly dry; head-ache comes on; there is more or less thirst; the pulse continues rapid, but becomes full; and the urine, which is still small in quantity, is now high-coloured. Then perspiration succeeding to the dry condition of the skin, the functions are again restored in a greater or less degree to their natural condition, and there is a corresponding remission of the symptoms. After this remission there is commonly an accession of the febrile attack, usually in the evening.

The causes which predispose to this disease are whatever causes diminish the general vigour of the system, such as great fatigue, excess of every kind, long exposure to a humid atmosphere, and so on. The great exciting cause is cold, especially when combined with moisture.

With regard to the treatment—when the disease is in its mild form nothing is required but confinement to the house in a uniform temperature in a warm room; demulcent and opiate medicines to determine to the surface; mild purgatives, and the abstinence from all stimulating food and drink.

When the feverish symptoms have subsided, when

all uneasiness of the chest is gone, and the cough is slight, some light tonic, as any of the ordinary bitters, will assist in restoring the strength of the patient, and in preventing a relapse.

When the disease is in its severer form, and more especially when it is very acute, that is, when there is much difficulty of breathing, much oppression at the chest, very irritating cough, and a high degree of fever, blood-letting is indispensable. The quantity of blood taken must of course be in proportion to the intensity of the disease and the strength of the patient, but it must be in sufficient quantity to produce a decided impression upon the heart's action, and consequently upon the power and rapidity of the circulation. Antimonials exhibited in decided doses immediately after the blood-letting, commonly prevent the necessity of any further depletion. The best preparation of antimony is tartar emetic, given in solution, to the extent of from one to two grains every second or third hour. The vomiting induced by the first doses commonly subsides or becomes slight after the third or fourth dose. Occasionally, however, this remedy produces so much irritation in the stomach and the system in general that it cannot be given in the quantity necessary to render it efficient; then ipecacuanha forms an excellent substitute, the powder of which may be given in doses of from one to two grains every three or four hours. When the fever subsides, but the difficulty of breathing and oppression at the chest continue, blisters are highly advantageous. The cough, in itself teasing and exhausting, and often aggravating every other symptom, must be allayed by oily emulsions, barley water, linseed tea, &c.; and if these fail, and the cough continue so violent as to prevent rest, opium must be given to the extent necessary to subdue it. The opium should always be combined with diaphoretics, so as to determine to the skin, at the same time the irritation is allayed. The bowels should be kept moderately open during the whole course of the disease; and there is no remedial measure of greater importance than the maintenance of the temperature of the apartment steadily and invariably, day and night, at the same point, a point which will insure a moderate degree of warmth, from 65° to 70°. A great degree of heat is a most pernicious stimulus; cold is the great exciting cause of the disease, and any considerable alternation from heat to cold, or from cold to heat, is of itself sufficient to counteract the beneficial operation of the most efficient remedies the most skilfully combined. The due modification of this general plan of treatment according to individuality of constitution, more especially in the feeble, and in those predisposed to organic disease of the lungs, according to age, more especially in those of advanced age, in the child and in the infant, is of the highest importance in practice: but it is impossible in this place to enter into minute detail; all that can be done is to state and illustrate the general principles that should guide the treatment. (See Lænnec on *Diseases of the Chest*. *Lectures on the Diseases of the Lungs*, &c., by Dr. T. Davies. *Art. Bronchitis*, Dr. Copeland's *Dict. of Practical Medicine*.)

BRONCHITIS, or inflammation of the bronchi or tubes of the lungs, is a very serious disease among quadrupeds. It is occasionally confined to the lining membranes of these passages, but it more frequently spreads to the lining membrane of the windpipe and larynx, and to a greater or less degree involves the substance of the lungs.

Horses.—It is not a common disease in the horse, but is easily recognized by an interrupted wheezing sound in breathing that can be heard at some distance; a tenderness to coldness in the extremities, distinct from the same in increased heat of catarrh and the deathly iciness of inflamed lungs; a pulse quicker than either in catarrh or the early stage of pneumonia, not so hard as in pleurisy, but more so than in catarrh or inflamed lungs; the nostrils dilated, and the respiration strangely quickened, being often more rapid than the pulse; a haggard countenance, an almost perfect inability to move, from fear of suffocation; a cough exceedingly painful; a purulent discharge from the nostrils of a greyish green colour, which soon becomes fetid or mingled with blood; the breath hot; and no expression of pain in any particular part indicated by looking at the side or flank. Pieces of hardened mucus, or organized membrane, are also frequently coughed up.

Bronchitis is sometimes a primary disease, but it is oftener the consequence of neglected catarrh or long-continued but slight inflammation of the lungs. It is occa-

sionally epidemic. Every affection of the respiratory organs will then rapidly degenerate into this disease. As it pursues its course, the membrane becomes thickened by inflammation, and the calibre of the bronchial tubes is proportionally diminished, while the mucous secretion is abundantly increased, and consequently the animal dies of suffocation, the air-passages becoming completely clogged.

Bleeding should be early resorted to, but very cautiously; for what is true of every mucous membrane is more especially so here—the patient will not bear considerable or rapid depletion. While the blood is flowing, the finger of the veterinary surgeon should be on the sub-maxillary artery, and the vein should be pinned up as soon as the pulse begins to falter: four pounds will scarcely be withdrawn before this will be the case. *Physic* should also be administered, but very cautiously; for the sympathy between the mucous membranes is sooner developed in this than in any other disease, and a degree of purging is readily excited which bids defiance to all control. Two drachms of aloes should be administered morning and night, until the *scæces* become softened. The dung having been rendered pultaceous, powdered digitalis, nitre, and sulphur should be administered morning and night, in doses varying according to the circumstances of the case. From half a drachm to two drachms of the first may be given, and from two to four drachms of each of the other drugs.

A blister is indispensable, and it should cover the brisket and sides, and extend up the windpipe even to the throat. The horse should not be coaxed to eat, and nothing more nutritive than mashes should be allowed.

Cattle.—Bronchitis is a still more formidable disease among cattle, and many thousand animals are yearly destroyed by it. The winter cough, which shameful neglect at first produces, and which inexcusable inattention and idleness suffer to continue, almost inevitably terminates in bronchitis or inflammation of the lungs, or both united. The food of cattle is much concerned in the production of it. Mouldy hay and bad straw, the very refuse of the farm, and the common ailment of the yearling cattle, too generally and fatally produce inflammation of the air-passages; and many a beast comes from the straw-yard bearing the seeds of death within him.

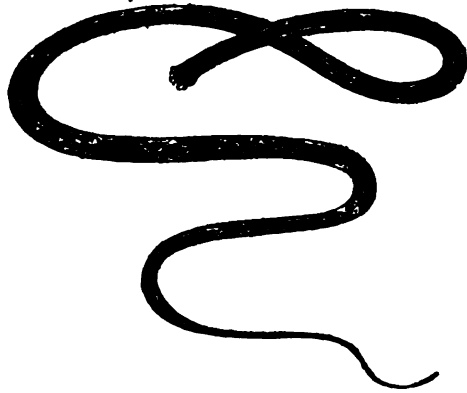
The most frequent victims of this disease however are young cattle, yearlings, and especially in low marshy or woody countries. On an upland farm, and particularly on a chalky and loamy soil, it is comparatively seldom known. It oftenest prevails in dry seasons, when the water of the brook fails, and that of the ponds is putrid and filled with animalculæ.

The attack of bronchitis is somewhat sudden; the animal has a dry, husky, and peculiarly distressing cough, and very soon begins to droop and to lose condition. It is painful to see the poor beast standing with his extended head, dilated nostrils, and anxious countenance; violently coughing, almost without intermission, until he is completely exhausted, and falls or dies of suffocation. This state of misery continues for a fortnight to a month. On examination after death the bronchial tubes exhibit some inflammation, yet far less than could be expected; while, characterising the disease, and fully accounting for all its distressing symptoms, these passages and the wind-pipe, and often the larynx and the fauces, are filled with small worms, forming a kind of coat mixed with the mucus, or connected together in knots of various sizes. The disease is either produced or much aggravated by the presence of these worms and the irritation which they produce.

These worms belong to the genus *strongylus*, and the species *filaria*. They are of a thread-like form, from half an inch to two inches in length; the body round, the head obtuse, the mouth circular, and surrounded with minute barbs, or elongated papillæ; the tail of the female pointed, and that of the male somewhat rounded and oblique. The female usually contains a great number of eggs; and a few of the ova, but so few as to appear to have been deposited there accidentally, are occasionally found enveloped in the mucus of the windpipe and the air-passages of the lungs. Of the natural history of this worm nothing is known, but the fact of the impregnation of the female shows that this is the last if not the only state of its existence.

The ova or the minute worms are received from the pastures, or, more probably, from the water, when stagnant or loaded with animalculæ. Being alive, they escape the digestive powers of the stomach, and mingle with the

blood, and thread the various circulatory passages until they arrive at a congenial abode; or the ova may be hatched by the warmth and moisture of the mouth, and then wind their way to their destined residence.



The modes of cure are evident: we should either destroy or remove these intruders, or strengthen the animal so that he shall bear up against the irritation which they excite. For it is well known to the farmer that if the patients, by the natural power of their constitution, or by the application of certain means, can struggle with the disease until the cold weather sets in, and the worm dies, or must find another residence, they will eventually recover. The pasture should be changed as soon as the disease is discovered. The supply of fresh recruits will be prevented, or possibly that deleterious matter, whether connected with the water or the pasture, which is necessary to their thriving and multiplying, will be no longer obtained. The simple change of pasture in an early stage of the disease has saved thousands of young cattle.

If however these parasites have so far established themselves as to resist this mode of attack, it must be considered whether some agent cannot be brought into actual contact with them, which will either destroy them, or so far annoy and weaken them, that they will loosen their hold and be expelled by the convulsive coughing of the calf. The most obvious method of accomplishing this is to cause the patient to breathe some pungent and deleterious gas, such as that produced by the burning of sulphur or the evolution of chlorine. By both of these fumigations the worms have been quickly and perfectly destroyed, but there is considerable care required in the management of these experiments; inflammation in the air-passages, very difficult afterwards to allay, has been produced, and occasionally the beast as well as the worm has been destroyed. This mode of treatment should therefore be considered as a last resource, and should never be intrusted to inexperienced hands.

There is a less dangerous and nearly as effectual a course to pursue. There are certain substances which undergo little or no change in the stomach or the intestines, but are taken up by the absorbents and enter into the circulation and are conveyed to every part of the frame, producing, when needed, their peculiar and beneficial effects: thus digitalis lowers the action of the heart, and turpentine increases that of the kidney. Are there any of these substances that are destructive to worms and that can be thus conveyed to the bronchial tubes? Turpentine certainly may, for if a very small portion of it is swallowed it is soon recognisable in the breath. It may be given to cattle in considerable quantities without the slightest danger, and thus may be brought into contact with and produce the destruction of these parasites. Common salt readily destroys many species of worms, and is conveyed through the circulatory vessels in a sufficiently pure state to expel these vermin from the air-passages: at the same time it is an admirable tonic, and supports the decaying strength of the animal. The most powerful vermifuge however in these cases is lime-water, and if half a pint of it, with a couple of ounces of common salt, is given to each patient every morning, attention being paid to a change, and perhaps a repeated change of pasture, and to the comfort of the animals in other respects, the majority of them will be saved.

This disease occasionally appears in lambs, deer, and swine. The mode of treatment should be the same as for calves.

BRONCHOCELE (*βρογχοκήλη*), from *βρόγχος* (bronchus), *throat*, and *κήλη* (*cèle*), a *swelling*, called also *Goitre* and *Derbyshire Neck*.—a swelling in the upper and fore part of the neck, occasioned by a preternatural enlargement of the thyroid gland. The tumour is free from pain, generally of the natural colour of the skin, does not readily inflame, and is not of a malignant character. Often the swelling is rather a deformity than an inconvenience; but occasionally, and especially when the tumour is large, it causes serious evil, by obstructing the voice and the respiration.

When the swelling first appears, it is soft, spongy, and elastic; after some time it assumes a more firm and fleshy consistence, being however firmer in some places than in others, and it gradually spreads towards each side of the neck until it attains in some cases a prodigious magnitude. In general the swelling affects the whole gland, but occasionally only one lobe is enlarged. When the swelling attains a great size, and the lower part of the gland is more especially involved in the disease, the tumour hangs pendulous from the neck. On examining the interior of the gland, it is found to consist of innumerable cells of different sizes, which are all filled with a transparent viscid fluid. Nothing is known of the real nature of this disease. Little is ascertained of the causes which either predispose to it or which produce it. Many causes are assigned, which is commonly the case when no cause is known. Moreover, in the present instance, several of the causes assigned are contradictory. What is certain is that there are countries, or rather particular places in certain countries, for example Switzerland, Savoy, the Tyrol, certain districts of South America, and some places in Great Britain, as Derbyshire, in which the disease is *endemic* (common to the inhabitants of the same country, from some cause specially connected with that country). It is much more common in females than in males. In Great Britain it is very seldom seen in males, but in Switzerland, and in other places in which it is very prevalent, males are more often attacked than in Britain. It commonly occurs about the age of puberty, and in girls seems to be strictly connected with an irregularity in the female health. Dr. Copland says, 'In a considerable number of cases which have come before me in females, I have never met with any before the period of commencing puberty,—not even at the Infirmary for Children; although the menses have often been delayed for a year or two, or even longer, when the tumour has appeared at this epoch; and I have seldom observed an instance in this sex unconnected with some irregularity of the menstrual discharge, or disorder of the uterine functions. In two cases occurring in married females, who were under my care, unhealthy or irregular menstruation had existed during the continuation of the goitre; in one case for eight years, in the other for five; upon its disappearance pregnancy took place in both. Suppression of the menses has sometimes caused its sudden appearance and rapid development; and it more rarely has originated during pregnancy and the puerperal state. Authors have adduced conclusive proofs of its occurrence hereditarily, independently of endemic influence.'

It has been said to have an intimate connexion with poverty and bad food, the rich being comparatively exempt from it, but on this point the statements are conflicting. It has been very generally attributed to water used as drink, and more especially to snow-water; but the disease occurs where there is no snow, as in Sumatra and several parts of South America; the Swiss who drink snow-water are free from the disease, while those who use hard spring-water are prone to it. In his journey to the Polar Sea, Captain Franklin observed that at a part where bronchocele prevails, the disease is confined to those who drink river-water, while those who use melted snow escape. Mr. Bally ascribes its frequency, in a district in Switzerland, to the use of spring-water impregnated with calcareous or mineral substances; and he states that those who use not this water are free from both goitre and cretinism. Dr. Coinder observed that the inhabitants of Geneva, who drink the hard pump-waters, are those most liable to bronchocele. Its prevalence in Nottingham is ascribed by Dr. Manson to the same cause; which also seems to occasion it in Sussex and Hampshire, in the valleys of which counties it is frequently met with.

It is unquestionably most frequent in low, moist, marshy, and warm valleys even in the very districts in which it is endemic, the inhabitants of dry and elevated situations are exempt from it; but it is probable that the malaria of those

places operates only as a predisposing cause, favouring the action upon the system of some unknown agent.

But in whatever obscurity the nature and cause of this disease may be involved, there has been recently discovered for it a very effectual remedy in the substance called iodine. This remedy has been employed with great advantage at Geneva, and in England with so much success, that Dr. Manson of Nottingham states, that out of 120 cases treated with it by him, 79 were cured, 11 greatly relieved, and 2 only were not benefited by it. Other physicians, who have had considerable experience of bronchocele, bear the like testimony to the efficacy of iodine as a remedy. As administered by some practitioners however it has wholly failed, apparently owing to their having administered it in too large doses. In persons of a lax fibre and irritable habit, and in children more especially, it is apt to produce a high degree of irritation, so that only the mildest preparations, largely diluted, should be employed. In obstinate cases the external use of it may be combined with its internal administration, but great care should be taken that the ointment which is rubbed into the tumour should not be of sufficient strength to produce irritation. Occasionally no remedy will avail, and it is necessary either to take up the arteries which supply the gland, or to remove the tumour from the body. Of these operations a full account will be found in surgical books.

BRONTE, a town in the intendenza or prov. of Catania in Sicily, situated at the western base of mount *Ætna*, and near the outer skirts of the woody region which encircle that mountain, and which near Bronte abounds in pines of very large size. The territory of Bronte is healthy and fertile, and produces corn, almonds, pistachio nuts, and wine. The wine which is exported to England from this part of the country is called Bronte wine. Bronte lies near the banks of a stream, called by the ancients *Cyanosoros*, which is one of the affluents of the *Simæthus* or *Giarretto* (*Cluverius*). It has manufactures of paper and earthen-ware. Pop. 9400. (*Smyth's Sicily*.) Bronte is a modern town (notwithstanding the fabulous tradition which derives its name from one of the Cyclops), and has grown out of several scattered habitations since the time of *Charles V.* (*Ferrara Storia dell' Etna*.) It was formerly a fief, with the title of Duchy. Admiral Lord Nelson was made Duke of Bronte in 1799, by King Ferdinand, as a reward for his services in the cause of that prince, with an income of 60,000 *onze*, about 3000*l.* sterling. (*Colletta Storia di Napoli*.) It is 22 m. N.W. of Catania, and 55 m. S.W. of Messina.

BRONZE, Ital. *bronzo*; Fr. *bronze*; Gr. *χαλκός* (*chalcos*), Lat. *æs*, is essentially a compound of copper and tin, which metals appear to have been among the earliest known. Copper is not unfrequently found in its metallic state, and fit for immediate use; and tin, though not met with, often occurs near the surface, and its ore is easily reduced. These metals, though neither of them possesses the hardness requisite for making instruments, either for domestic or warlike purposes, appear to have been early found capable of hardening each other by combination; the bronze, which is the result of this combination, consisting of different proportions of them, according to the purposes to which it is to be applied.

Bronze is always harder and more fusible than copper; it is highly malleable when it contains 85 to 90 per cent of copper; tempering increases its malleability; it oxidizes very slowly even in moist air, and hence its application to many purposes. The density of bronze is always greater than that of the mean of the metals which compose it; for example, an alloy of 100 parts of copper and 12 parts of tin is of specific gravity 8.80, whereas by calculation it would be only 8.63.

The precise etymology of the word 'bronze' has not been ascertained, but it is first met with in Italian writers to express this mixture of metals, and it is not very improbable that it is a corruption from the Italian *bruno*, which signifies *brown*; the bronze of the Italian, and particularly the *cinqve cento* schools, being of that colour, which is nearly the original tint of the material when left in its natural state. The green hue that distinguishes ancient bronzes is acquired by oxidation and the combination of carbonic acid: and the moderns, to imitate the effect of the finer antique works, sometimes advance that process by artificial means; usually by washing the surface with an acid. Vasari alludes to this practice among the artists of his time, and to the means they adopted to produce a

brown, a black, or a green colour in their bronze. (Vit. dei Pittor. *Introd.*) The Greeks and Romans, in speaking of works in bronze, used words which at once referred to the metal; the Greek *chalcos* being a mixture of copper and tin, and the Roman *æs* the same. These words are often understood by moderns to denote brass, which is however a different composition, being a mixture of copper and zinc.

Though there is no doubt that the uses of some of the metals were known very early, there is unfortunately little or no information either on the mode of working them, or of the time of their discovery. It is clear however that, for a long period, copper, if not the only metal known, was at least the most abundant, for we find it was employed universally for arms, ornaments, and utensils, domestic and agricultural. Iron was apparently of much later discovery. The simpler processes of metallurgy seem to have been practised at a very remote date both in Asia and Egypt. On this subject the Old Testament is our best authority, and the accounts we there find lead us to believe that considerable skill had been attained by the very earliest nations. Tubal Cain was, we are told, a great worker in metal. Among the earliest allusions to works in metal in the Books of Moses is the mention made of the presents offered to Rebecca: Abraham's servant gave her 'a golden ear-ring of half a shekel weight, and two bracelets for her hands of ten shekels weight of gold,' and spoke to her of his master's riches, particularly mentioning silver. (*Gen.* xxiv. 22.) The accounts of the ornaments and utensils in the history of Jacob, and of Joseph, and in various other passages of the Old Testament, prove in like manner the extensive employment of metals at that time; and their being applied to purposes of luxury indicates that considerable progress had been made in the art; long use naturally preceding any attempt at refinement. The earliest recorded names of sculptors (and they are metal-workers) are in the Old Testament. One was 'Bezaleel, of the tribe of Judah, who was filled with the spirit of God, in wisdom, and in understanding, and in knowledge, and in all manner of workmanship, to devise cunning works, to work in gold, and in silver, and in brass,' &c. &c.: with him is associated Aholiab, of the tribe of Dan. They were the artists appointed to execute the works of the Tabernacle. (*Exod.* xxxi.) Among the Egyptians also the employment of metal was known in times prior to any historical record; and it is probable that the metallurgical knowledge possessed by other countries was derived directly or indirectly from this source. Among other proofs of this, the casting of the golden calf by the Israelites may be cited. It is remarkable however that, among the remains of bronze works of art that have been discovered in various parts of Egypt, none have been found of large dimensions. Some of the most remarkable early works in metal mentioned in history are those recorded by Diodorus Siculus, who in this part of his history followed Ctesias, a Greek historian and physician contemporary with Xenophon. He describes works in gold and bronze which decorated the gardens of Semiramis, of such a magnitude, and representing so great a variety of subjects, that, if we are to place any confidence at all in the testimony of this writer, we must conclude that the Assyrians and Babylonians had attained very great proficiency in the arts connected with metallurgy. That the statements of Diodorus, which in fact are those of Ctesias, are to be received with some qualification, must be granted; but we must not refuse some credit to the traditions respecting nations which were certainly possessed of many useful arts, and at one time commanded the resources of western Asia.

It is much to be regretted that we have no remains of Phœnician art. The skill and enterprise of this people gave them a commanding station among the antient nations, and they must have materially influenced the civilization not merely of neighbouring but of remote countries; but unfortunately the few monuments that can be referred to a Phœnician origin (namely, some found at Carthage, a Phœnician colony) are of too distant a date from the brilliant epoch of the Phœnician nations to be fairly quoted as specimens of original taste or practice. Their supposed traffic with Britain furnished them tin, or probably they procured it from Spain or Eastern Asia. Homer has immortalized the Sidonians with the distinguished title of 'Ἐδόνες πολυδαίδαλοι,' *the Sidonians the skilful workers*. The artificer employed by Solomon in the decoration of the Temple (about 1000 years before our era)

was Hiram, a native of Tyre, 'who was cunning to work all works in brass.' (1 *Kings* vii.) These works, we are told, were cast and wrought.

We know so little of the earlier history of the arts in India, that we must be satisfied with observing that many specimens of their bronze works, of which we possess some curious examples in this country, as idols, utensils, &c., may be referred, without doubt, to an extremely remote date; but the slight changes that have taken place in the style of their art and workmanship prevent any classification of them, or even an approximation to the times at which any of the more antient were executed.

The works that remain of the Greeks, whether considered with reference to the illustration of their history, or for the exquisite specimens which they offer of their taste and feeling in imitative art, claim our especial regard, and the names of few sculptors, or rather statuaries, of celebrity have reached us who were not chiefly distinguished for the excellence of their productions in bronze. In the time of Homer the scarcity of iron occasioned the general use of other metals; and we find the arms, offensive and defensive, are always described as being made of bronze, or perhaps copper alone, which it is possible they had some means of tempering and hardening. (Caylus and others.) The art of casting statues seems to have been first practised in Asia Minor, Greece, properly so called, being probably too uncivilized to undertake such works. The Lydians and the Phrygians were early distinguished for their skill in these arts, and they were probably the teachers of the Greeks.

The records to be depended upon as to Greek art go as far back as between 600 and 700 years B.C., and the mode of working metal at that time seems to have been the same, or nearly so, as far as there are means of judging, as that adopted by other and earlier nations. The first and most simple process appears to have been hammer-work; that is, lumps of the material were beaten into the proposed form; and if the work were too large to be made of one piece, several were shaped, and the different parts fitted and fastened together by means of pins or keys. Pausanias (iii. 17) particularly describes this process in speaking of a very antient brass statue of Jupiter at Sparta; and this mode of working (mentioned by Herodotus, vii. 69) is called by him and others *σφρηλάτων* (*sphurêlaton*), 'hammer-worked,' in opposition to the term *ἔργα χυμυρά* (*chomusta*) applied to 'works that were cast.' This statue of Jupiter was the work of Learchus of Rhegium, and Pausanias says it was the most antient statue of the kind; by which he probably only means that it was of the most archaic or antient style, as Herodotus, Diodorus Siculus, and others, as well as Pausanias himself, refer to other works of a more remote date. Pliny (xxxiii. 4.), in speaking of a solid gold statue of Diana Anaitis, refers to a mode of execution termed *Holosphyraton* (derived from three Greek words signifying 'entire, solid,' and 'hammer'). It was so called probably to distinguish it from another kind of hammer-work, in which plates of metal were beaten out into the form desired on a nucleus of another material, of which, as some believe, a curious specimen of antient Egyptian workmanship may be seen in the British Museum. This process is alluded to in Homer (*Odyss.* iii. 425); and as early as Moses the brazen censers of the disobedient were, by the lawgiver's command, *beaten out into plates* for covering the Tabernacle. The most antient civilized inhabitants of India seem to have adopted the same manner of working in laminae, or plates: there is an example of it in the British Museum in a figure of Buddha. A great saving of metal was effected by this process.

Soldering (*κόλλησις*), or the art of uniting the parts of metals, is attributed (Herod. i. 25) to Glaucus of Chios, a contemporary of Alyattes king of Lydia. The art of soldering iron is attributed solely to Glaucus. (Compare Pausan. x. 16. with Herod. i. 25.)

It is extremely difficult to determine when the art of metal-casting in regular moulds was first practised. It was undoubtedly known very early, though its adoption in European Greece is probably of a comparatively late date. Its progress was evidently marked by three distinct stages. The first was simply melting the metal into a mass, and then beating it out either as solid hammer-work, or in plates. The next was casting it into a mould or form; the statue being of course made solid. The last, which argues considerable knowledge and skill, was casting it into a mould,

with a centre or *core* to limit the thickness of the metal. The first artists who are celebrated by the historians of Greece art for their success in metal-casting are Rhœceus (who is said to have invented the casting of metal), Theodorus, and Telecles, natives of Samos (Herod. i. 50; Paus. viii. 14; Plin. *N. H.* xxxv. 12); and the manner in which they are spoken of proves that their works were held in high estimation long after their own time. There is some difficulty in fixing their date with precision, as there were two or three of the same names, but it seems probable that the first artists so called lived between 700 and 600 a.c. Theodorus is made by Herodotus the contemporary of Croesus, who was defeated by Cyrus b.c. 557. Gitiadas of Sparta and Glaucias of Ægina hold also a distinguished rank among the earlier artists in bronze; to whom we might add a long list. Herodotus (v. 77.) says that four bronze horses were made by the Athenians from the tenth part of the value of the ransom of the Bœotians and Chalcidians: the horses were placed at the entrance of the propylæa on the Acropolis, with an appropriate inscription. The ancient artists do not appear to have considered it important to cast their statues entire, for Pliny acquaints us with the composition used for soldering the parts together. The finest collection of ancient bronzes, taking it as a whole, is at Naples: among the specimens there are some very curious for the manner in which the ringlets of hair, worked separately, are fastened on: many of these are the size of life. Bronze-casting seems to have reached its perfection in Greece about the time of Alexander the Great, 330 b.c. The accounts given of the works executed about that time almost exceed credibility. After Lysippus, the favourite sculptor of Alexander, who executed, according to Pliny (xxxiv. 8), above 600 works, the art declined.

The ancient statuary seem to have been extremely choice in their selection and composition of bronze. Two of the most celebrated, contemporary with Phidias, carried their rivalry so far as to employ bronze of different countries; Polyclethus preferring that of Ægina, while Myron always used that made at Delos. The ancients seem to have had a method of running or welding various metals together, by which they were enabled to produce more or less the effect of natural colour. Some works are described that were remarkable for the success which attended this curious, and to us unattainable, process. They also tinted or painted their bronze with the same view of more closely imitating nature. (Callistrat., *Stat.*; Plin. xxxiii. 9; Plut., *Symp.* lib. v., and others; see also Quatremère de Quincy, *Jup. Olymp.*) The story of the accidental mixture of the most precious bronze used by the ancients, namely the Corinthian, has been too often repeated to require further notice here. Pliny himself refutes the story which he records. He informs us also that there were three sorts of the Corinthian bronze. The first, called candidum, received its name from the effect of silver which was mixed with the copper; the second had a greater proportion of gold; the third, Pliny says, was composed of equal quantities of the different metals. The ancient writers mention several of the bronzes that were used: amongst them we find Æs Hepatizon, or liver-coloured; Æs Deliacum, and Æs Ægineticum—Plutarch says the composition of the Delian brass was a secret lost in his time—Æs Demonesium, Æs Nigrum, and, lastly, Tartessian bronze (*Ταρτησίου χαλκός*), of which, it must be confessed, we know little or nothing beyond their titles. The analysis of a few specimens of bronze of undoubted antiquity, namely a helmet with an inscription (found at Delphi, and now in the British Museum), some nails from the treasury of Atreus at Mycæne, an ancient Corinthian coin, and a portion of a breastplate or cuirass, of exquisite workmanship, also in the British Museum, affords about 87 or 88 parts copper to about 12 or 13 of tin per cent. The experiments of Klaproth and others give nearly the same results as to ingredients; the quantities sometimes differ slightly: lead is contained in some specimens. Zinc has not been found in any quantity sufficient to warrant a belief that it was intentionally introduced; indeed it is thought that its nature was not understood by the ancients. In an antique sword found many years ago in France, the proportion in 100 parts was 87.47 of copper to 12.53 of tin, with a portion of zinc so small as not to be worth noticing (Mongez, *Mém. de l'Institut.*). The same may be observed of minute portions of silver that have sometimes appeared
ve. (Antichit. di Ercolano.)

Romans never attained any great eminence in the

arts of design. Their earliest statues were executed for them by Etruscan artists. Rome however, as the conquest of that warlike people were extended, was soon filled with a prodigious number of works of the best schools of Greece: and artists of that country, unable to meet with employment at home, settled in the capital of the West. Zenodorus executed some magnificent works in the time of Nero, particularly a colossal statue of the emperor, 110 ft. high. But Pliny, who lived in the reign of Vespasian, laments the decline of the art and the want of skill of the artists in his time. It is even said that the art of casting bronze statues was lost. This assertion is however totally unfounded, for it appears that a Greek sculptor, Celen, was highly distinguished under Domitian, and one of his works, a colossal equestrian statue cast in bronze, is much celebrated; and there is no doubt that the art was well known under Trajan, Hadrian, the Antonines, and even much later.

The practice of gilding bronze statues does not seem to have prevailed till taste had much deteriorated, and when the richness of material was more highly thought of than the excellence of workmanship. Pliny tells us that Nero commanded a statue of Alexander, by Lysippus, to be gilt, but when done it was found to have so much injured the effect or beauty of the work, that the gold was by the emperor's orders removed. The injury was doubtless occasioned by the glitter and sparkling of the light upon the projecting and shining surfaces, destroying the breadth, and consequent grandeur and unity of effect secured by the more sober colour of the bronze. The practice of art among the Romans declining rapidly, and with but few interruptions, ceases to interest us about 200 a.d. In the beginning of the thirteenth century, at the taking of Constantinople, we read that some of the finest works of the ancient masters were purposely destroyed, either with the object of converting the material into money, or for sale to the brass-founders, for the mere value of the metal. Among the few works saved from this devastation are the celebrated bronze horses, which now decorate the exterior of the church of St. Mark at Venice.

Passing over the intermediate age of darkness and barbarism, we arrive at the epoch of the revival of art in Italy, under the Pisani and others, about the fourteenth and fifteenth centuries. The celebrated bronze gates of the Baptistery at Florence, by Ghiberti, which M. Angelo said were fit to be the gates of Paradise, are among the more remarkable works of the time. In the succeeding century we find Guglielmo della Porta practising the art with so great success, that he obtained the flattering notice of Michel Angelo; and he is distinguished by Vasari (*Vas. Vit. di Leone Leoni*) for adopting a mode of casting that was considered quite original, in executing his colossal statue of Paul III. The metal, when run from the furnace, was carried downwards by a duct, and then admitted into the underside or bottom of the mould (*nel bagno di basso*); and thus, acted upon by superior pressure, as in a common fountain, was forced upwards till the mould was entirely filled. It is necessary in this process that the mould should be kept in a state of great heat, in order that the metal may not cool before the whole is run. But among the artists who are celebrated for their skill in bronze-casting, Benvenuto Cellini holds a most distinguished rank: there are few collections that cannot boast some specimens of his smaller productions, while the larger works that remain, particularly at Florence, prove that his high reputation was not undeserved. In his interesting and romantic autobiography he gives some curious particulars on metal-casting; and an anecdote which he tells respecting one of his works illustrates an important fact in the process, *viz.* c. at the same time, it is highly characteristic of the impetuosity of the man. Copper alone is thick and pasty, and therefore incapable, without some alloy, of running into all the cavities and sinuosities of the mould; a small mixture of tin is therefore usually added to give it the quality necessary for producing what is called a true cast. He was engaged on his fine group of Perseus and Medusa, during which, by the jealousy of rivals and the ill-conduct of his workmen, he had been subjected to every kind of annoyance and disappointment. At length his labours seemed to be nearly at an end: his mould was lowered into the pit, the furnace heated, and the metal thrown in. At this time, while a violent storm raged without, the roof of his study, as if to increase the confusion, caught fire; but, though ill and harassed, he still directed the works and en-

couraged his assistants, till overcome by anxiety and fatigue he retired in a raging fever to lie down, leaving instructions respecting the opening of the mouth of the furnace, and the running of the bronze. He had not, he says, been reposing very long before one came running to him to announce evil tidings: the metal was melted but would not run. He jumped from his bed, rushed into his studio like a madman, and threatened the lives of his assistants, who being frightened got out of his way, till one of them, to appease him, desired him to give his orders and they would obey him at all risks. He commanded fresh fuel to be thrown into the furnace, and presently, to his satisfaction, the metal began to boil. Again however it appeared thick and sluggish, and refused to run. He then ordered all the plates, dishes, and other articles of domestic use in his house to be brought to him, which he threw pell-mell on the metal, when it immediately became fluid and the mould was soon filled. He adds that he fell down on his knees, and poured forth a fervent thanksgiving to Almighty God for the success that had crowned his exertions. In the processes above described the metal was allowed to flow at once from the furnace into the channels or ducts of the moulds. The statue of Louis XIV., by Girardon, one of the most celebrated sculptors of France, was cast somewhat differently, though with equal success. The wax which regulated the thickness of the metal being entirely melted out, and the mould fixed in the pit, with the necessary vents for the escape of the air, the metal was allowed to run from a furnace, placed considerably above, into a sort of trough or basin. In this were three apertures, closed by plugs, immediately over the chief channel or conduit by which the metal was to be conveyed into the mould. These, by a mechanical contrivance, were opened simultaneously, when the metal descended at once into the mould. This group was cast entire.

The more modern practice of the English, French, Italian, and German artists does not differ materially in its principle from that of the earlier Italians. Some however use what is called a cupola-furnace, and others a blast-furnace. A few observations on the mode practised in Mr. Westmacott's foundry, where the chief colossal as well as other works that have been produced in this country have been cast, may not be misplaced here. The moulds, composed of a mixture of plaster of Paris and brick-dust, are made in the usual way on the plaster-cast models. A lining of wax or clay is then made within the mould, of the proposed thickness of the metal. The mould thus lined being then put carefully together, the space or interior is filled up solid with a mixture of plaster and brick-dust. &c.: this is called the core. The whole now consists of three parts—the mould, the lining of wax or clay (which represents the metal), and the core. When the mass forming the core is set, and fixed with irons and keys to preserve it in its just position, the mould is again taken to pieces, and the wax or clay removed; the channels for distributing the metal and vents for the escape of the air are then made, and the whole being put together is placed in a stove or oven to be dried. When perfectly free from any humidity (a most important point, as the slightest damp might occasion fatal consequences by the bursting of the mould when the boiling metal descends into it), the whole is carefully lowered into the pit, and closely rammed down with sand, &c. to prevent its moving; the channels for the metal to enter and the vents for the escape of the air being of course kept perfectly clear. When the metal is ready for running, the mouth of the furnace, which is placed rather above the level of the top of the pit, is opened, and the bronze descends immediately into the mould. The mixture of metal preferred by the above-mentioned sculptor is that used for casting guns [CANNON], to which he adds about 30 per cent. of pure copper, extracting from 3 to 4 per cent. of tin. In modern practice it is not considered important to cast the whole work at once: on the contrary, in case of accidents, which however are of very rare occurrence, there is an advantage in being able to repair parts; and the process of burning, successfully adopted by Westmacott and others in the largest works (and which is found a great improvement on the ancient method of soldering), renders the joined portions even firmer or stronger at their point of junction than the general body of the cast.

It has already been stated that bronze for different uses varies in composition. In France bronze for cannons is composed of 100 copper and 11 tin. Bronze for cymbals and tamtans is composed of 78 copper and 22 tin; its spe-

cific gravity is 8.815. Some cymbals yielded however 80 per cent. of copper. Dr. Thomson found English bell metal to consist of

Copper	.	.	.	80
Tin	.	.	.	10.1
Zinc	.	.	.	5.6
Lead	.	.	.	4.3
				100.

Reflectors for telescopes consist of 66 parts of copper and 33 parts of tin: they resemble steel in colour, are very hard and brittle, and susceptible of a fine polish.

Bronze for medals is formed of 100 copper and 7 to 11 of tin and zinc.

This short history of bronze-casting is purposely limited to its reference to the fine arts; and though, in speaking of celebrated productions or artists, it has been considered right to introduce, incidentally, such particulars of practice as might tend to illustrate the subject, the details of the various processes of moulding, coring, melting, chasing, &c. &c. are omitted, as belonging more properly to founding and casting.

BROOKE, HENRY, is one of the occasionally recurring instances of men of letters who having, from accidental circumstances, enjoyed during life a reputation beyond their merits, afterwards sink into an oblivion so complete, that it might be said to be almost equally undeserved, were not mediocrity in belles lettres, especially in poetry, almost the same as worthlessness. Henry Brooke published his first poem, 'Universal Beauty,' with the approbation and sanction, and even with the direct encouragement and under the patronage of Pope; he was received by him and Swift, if not as a literary compeer, yet as decidedly one of their class; and his tragedy of 'The Earl of Essex' long ranked, we believe, among what are called stock plays. Yet now the author is all but forgotten; he was not allowed a place in the list of Johnson's poets; and his 'Universal Beauty,' which, though deformed by awkwardness and even incorrectness of language, admitted for the sake of metre and rhyme, displays considerable imagination and descriptive power, is now, and for years has been, so absolutely unknown, that later poets have borrowed ideas from it without fear of detection.

Henry Brooke, born A.D. 1706, was the son of an Irish clergyman. At Trinity College, Dublin, he was a pupil of Dr. Sheridan, through whom, upon going to London to study the law, he was first introduced to Pope and Swift, when his own promising talents seem to have gained him their favour. After the publication of his great poem he was presented to Frederic Prince of Wales, and received by him as one of the band of men of letters whom that prince considered as powerful agents in his hostility to his father's administration. In this character Brooke is accused of having written his tragedy of 'Gustavus Vasa,' not merely with a view of exciting and fostering a spirit of liberty, but in order to vituperate the premier, Sir Robert Walpole, under the name of the tyrannical minister Trollo. This suspicion has since been indignantly repelled by Brooke's admirers; but it was so universally entertained at the time, that the stage licenser prohibited the representation of the piece, and the author, in consequence, made far more by its publication and sale than he could have hoped from its utmost success upon the stage, to wit, 1000*l*.

Ill health and the persuasions of his wife, who dreaded and sought to withdraw him from his political connexions, induced Brooke to return to Ireland, where he spent the remainder of his life, and obtained from Lord Chesterfield (when viceroy) the post of barrack-master, which he held till his death. He had a large family, and though possessing, it is believed, no means beyond his official salary and his literary earnings, he generously supported a brother with an equally large family. He thus involved himself in pecuniary difficulties, which, together with the loss of his wife, after a happy marriage of 50 years, and of several of his children, so preyed upon his mind, already weakened perhaps by age, as to impair his intellect; and, unfortunately for his fame, he continued to write and to publish after the decay of his faculties had become too apparent. He wrote in all 13 tragedies, of which only 'Gustavus Vasa' and 'The Earl of Essex' could boast any success, many small poems, and part of a translation of Tasso's 'Gerusalemme Liberata.' His novel of 'The Fool of Quality' was much admired in its day; and his 'Farmer's Letters,' ad-

dressed to his Irish countrymen, are said to have had considerable influence in producing and maintaining the tranquillity of Ireland during the rebellion of 1745. Nor must the fact, honourable alike to Brooke's enlightened judgment and to his candour, be omitted, that he was one of the earliest advocates for the repeal of the penal laws, at that time in full force against the Roman Catholics. Henry Brooke died in the year 1783. (Campbell's *Specimens of English Poets*.)

BROOKLYN, a post-town in King's County, on the W. end of Long Island in the state of New York, situated in 40° 42' N. lat. and 74° 1' W. long., on the shore of East River, the channel which divides Long Island from the city of New York, and which at this part is little more than half a mile broad.

Brooklyn is an incorporated town and contains the private residences of many merchants of the city of New York. The communication between the two places is kept up by steam-vessels which are constantly passing and re-passing throughout the day. The growth of Brooklyn within the present century has been very rapid. The pop., which in 1800 amounted to 3278, was 4402 in 1810, 7175 in 1820, and 12,043 in 1830. It contains two banking corporations with capitals of 300,000 and 200,000 dollars respectively, and three insurance companies, whose aggregate capitals amount to half a million of dollars: it has also some manufactures and trade. Many of the houses are spacious and of handsome elevation, and the view of New York and its har. from the terrace on East River is very fine. To the E. of Brooklyn, at Wallaboght, is a navy-yard and storehouse, which belong to the general government of the U. S. Near Flatbush, to the S. of Brooklyn, a battle was fought between the British and Americans in the revolutionary war.

BROOM. [SPARTIUM.]

BRO'SCUS, a genus of coleopterous insects, according to Latreille belonging to the section of the Carabidæ called *Simplicimani*. In Latreille's work, however, this genus retains the name of *Cephalotes* (given to it by Bonelli, from the circumstance of the species possessing an unusually large head), which has been expunged by many naturalists owing to its having been previously used to designate a genus in some other branch of natural history.

The insects of this genus are remarkable for the almost total absence of the indented striæ on the elytra, generally observed in the insects of the tribe to which they belong, and for the large and strong mandibles, the elongate form of the body, and the somewhat heart-shaped thorax, which is much attenuated posteriorly.

Technical characters:—palpi with all their joints of nearly equal thickness, the terminal joint of the maxillary palpi rather short and truncated: the antennæ if extended backwards reaching to the base of the thorax: mandibles unidentate internally: labrum entire: anterior tarsi of the males with the three basal joints dilated.

The species are generally found under stones, and often accompanied by fragments of numerous other insects devoured by them. When taken in the hand they will often pretend to be dead, extending their limbs stiffly, and it is then with difficulty they can be made to move.

But one species of this curious genus is a native of this country—*Brosicus cephalotes*. It is of a dull black colour, and varies from three-quarters to an inch in length: its form is elongate; the head is nearly equal to the thorax in bulk; the elytra are nearly smooth, the longitudinal striæ being scarcely discernible. It seems to be confined to the sea-coast, where it is frequently found under stones or rubbish.

In Stephens's arrangement of British insects this genus is classed among the *Harpalidæ*.

About six or seven exotic species have been discovered.

BROSELEY, a m. t. and par. on the Severn, in the extensive district called Wenlock Franchise, Shropshire, 13 m. S.E. from Shrewsbury, 9 m. N. from Bridgenorth, and 130 m. N.W. from London. Its area contains 1550 English statute acres, and a pop., in 1831, of 2158 males, and 2141 females. The market-day is Wednesday; an annual fair is held on Easter Monday. The living is a rectory, united with the rectory of Linley, the gross annual income of which is 539*l*.

The pop. of Broseley are chiefly employed in the coal and iron mines of the district. In the Population Returns of 1831 it is stated that the par. of Broseley has experienced a decrease of pop. (515 persons), ascribed to the cessation of five iron blast furnaces; 126 persons are employed in

mines. The par. is divided from Coal-Brooks Dale by the Severn.

Broseley contains three daily schools, four day and boarding schools, and six Sunday schools. (*Education Returns*, 1835.)

A spring of petroleum or fossil tar was discovered here, in 1711, by an inhabitant of the place. This individual heard a noise in the night, about two nights after a remarkable day of thunder. At a boggy place, under a little hill, about 200 yards from the Severn, on digging up a part of the earth, water rose to a great height, and a candle set it on fire. The 'burning well,' as it was termed, was shown in several years as a curiosity, until the supply of petroleum failed. The spring broke out again, in 1747, in a similar way, about 10 yards from the old well. About 1752, the spring was cut into by driving a level in search of coal. The quantity of petroleum which then issued was about three or four barrels a day; but in 1797 there seldom flowed more than half a barrel in the same time. In 1802 the production was about 15 gallons per week. At Pitchford, a few miles from Broseley, is a coarse-grained sandstone, highly impregnated with petroleum.

In the par. of Broseley salt is said to have been made from water taken out of pits, still called the Salt-house Pits.

(*Phil. Trans.*, vol. xxvii., 1712; *Gent. Mag.*, vol. xxi., 1755, and vol. lxxvii., 1807; Archdeacon's Plymley's (*Cornet*) *Survey of Shropshire*; Aikin's *Tour*, 1797; *Encyc. Educ.*, and *Pop. Returns*; *Boundary Report on Wenlock*.)

BRO'SIMIUS, a genus of Urticaceæ, one species of which is believed to be the cow tree, or Palo de Vacca of South America. As this however is not certainly ascertained, we refer for an account of that remarkable vegetable production to the article *Cow-TREE*.

BRO'SMIUS, a genus of fishes belonging to the section Subbrachial Malacopterygii, and family Gadidæ. General characters:—body elongate, and furnished with a single dorsal fin which extends from near the head to the tail: the anal fin is also of considerable length, and extends from the vent to the tail: ventral fins small and fleshy: chest furnished with but one barbule. This genus was established by Cuvier; it is the genus *Gadus* of Pennant (*British Zoology*), and *Brosmius* of Flemming (*Brit. An.*)



[*Brosmius vulgaris*. The Torsk.]

But one species of brosmius has been found on our coast, and that appears to be confined to the northern parts: it is the *B. vulgaris* of Cuvier, commonly called the Torsk, and in the Shetlands the Tusk and the Brismak; in the latter locality it is abundant, and forms, when barreled and dried, a considerable article of commerce. In Yarrell's *History of British Fishes* we are informed that this species also recurs plentifully in Norway, as far as Finmark of the Faroë Islands, and the W. and S. coast of Iceland, and other parts.

Not having an opportunity of examining a specimen, we subjoin the description of one given by Pennant:—Length twenty inches, and depth four and a half: head small: upper jaw a little longer than the lower: both jaws furnished with a multitude of small teeth: on the chin was a small single beard: from the head to the dorsal fin was a deep furrow: the dorsal fin began within six inches of the tip of the nose, and extended almost to the tail: pectoral fins small and rounded: ventral short, thick and fleshy, ending in four cirrhi: the belly, from the throat, grows very prominent: anal fin long, and reached almost close to the tail, which is small and circular: colour of the head dusky: sides and back yellow, belly white, edges of the dorsal, anal, and caudal fins white, the other parts dusky: pectoral fins brown. We have only to add, that this description seems to agree well with the characters of the fish as given by other authors. For further information we refer our readers to Mr. Yarrell's work before cited.

BROTHERS, RICHARD. The birth and early years

of Brothers are not well known; nor indeed would the events of his after life deserve to be remembered, if his ravings had not exercised a considerable influence on his contemporaries, and thus connected his history with that of the superstition of his day.

Richard Brothers held for several years the rank of lieutenant in the British navy, which he quitted in 1789. A controversy with the lords of the Admiralty about his half-pay first developed that character of his mind, which ultimately ripened into a complete delusion. With respect to taking a certain oath in order to qualify himself to receive his pay, he sent a well-written letter to Philip Stephens, Esq., of the Admiralty, dated September 9th, 1790, which appeared in the Public Advertiser at the time. In this letter he exposes the dishonesty of compelling a man to swear that he takes a certain oath *voluntarily*, to which he may have an unconquerable objection. The absurdity of this practice he made so apparent, that the earl of Chatham had the word '*voluntarily*' erased from the form of oath. This, however, did not satisfy Brothers, who wished to be relieved from taking the oath altogether, an indulgence which he failed in obtaining.

In consequence of declining to take the oath, he was very near dying of hunger, and was ultimately taken to a workhouse. These privations, as well as many others which he afterwards endured, prove that the man was no impostor, but that he deceived others no more than he did himself, being firmly persuaded that his mission was from heaven. He affirms, in a book which he published in two parts, entitled '*A Revealed Knowledge of the Prophecies and Times, &c. London, printed in the year of Christ 1794,*' (which was eagerly bought by all classes, both in town and country),—'*It is from visions and revelations, and through the Holy Ghost, that I write this book for the benefit of all men; therefore to say it is false, that I am mad, am an impostor, have a devil, or am out of my senses, constitutes the dangerous sin of blasphemy.*'

From the year 1790 Brothers dates his first call, and soon after entered on what he considered his mission. On the 12th of May, 1792, he sent letters to the king, ministers of state, and speaker of the House of Commons, stating that he was commanded by God to go to the parliament house on the 17th, and inform the members, for their safety, that the time was come for the fulfilment of the 7th chapter of Daniel. Accordingly, on the 17th, he presented himself at the door of the House of Commons, and, according to his own account, met with a very scurvy reception.

Having some time after prophesied the death of the king, the destruction of the monarchy, and that the crown should be delivered up to him, he was committed to Newgate, where, if his statement be true, he was treated with great cruelty. But imprisonment did not damp his ardour. On his liberation, he continued what he denominated his ministry with renewed energy, and obtained many followers. While the more rational part of the community were laughing at the prophet, there were some persons of liberal education, and of good ability, who maintained the divinity of his mission. Among these, Nathaniel Brasseay Halhed, Esq., M.P. for Lymington, and Mr. Sharp, an eminent engraver, were the most zealous: they published numerous pamphlets and testimonials in his favour; and others to the same effect appeared by Bryan, Wright, Mr. Weatherall, an apothecary, and a Mrs. Green. Among other things, Halhed bore testimony to his prophesying correctly the death of the three emperors of Germany. As a reward for this testimony, and to remunerate him for being shunned and reviled by his friends and acquaintance, the prophet promised him, within three months from that time, the choice of being either president of the board of control or governor-general of India.

Such an effect had these and other similar writings on people of weak understanding, that many persons, as in the more recent case of Joanna Southcote, sold their goods, and prepared themselves to accompany the prophet to Jerusalem, where he was to arrive in the year 1795. Jerusalem was then to become the capital of the world; and in the year 1798, when the complete restoration of the Jews was to take place, he was to be revealed as the prince and ruler of the Jews, and the governor of all nations, for which office he appears to have had a greater predilection than for that of president of the council, or chancellor of the exchequer, which he said God offered for his acceptance.

Taken altogether the writings of Brothers are a curious

jumble of reason and insanity, with no small number of contradictions, as we might readily suppose. For instance, Halhed is promised, as a reward for his services, a principal place in the government by the 20th of May, 1795; it was however to be of short duration, for in another place we are told that by May 26th, in the same year, the government is to be annihilated for ever.

The following are some of the prophecies of Brothers, stated in the order in which they were published. Many of them have been either totally or partially fulfilled, a circumstance not at all surprising when we consider that they chiefly refer to the eventful period immediately subsequent to the French Revolution. As Brothers also gave himself considerable latitude in his prophecies, and prophesied very largely, the real wonder would be if none of them had been realized.

About July, 1792, in letters to the King, Queen, and Ministers of State, he prophesied the violent death of Louis XVI., and at different times that the then Empress of Russia should die by the hands of man; the French Republic would be established for ever; the King of England's power was to cease, and his crown to be delivered up to the prophet. Rome and Venice to fall under the power of the Emperor of Germany, the former to be retaken by the French, the latter to be plundered and almost destroyed. The emperor to be driven to make peace with the victorious French, and then quarrel with the English. This prediction was literally fulfilled: he made peace with France, December 26, 1805, and in 1808 declared against England. After which, according to Brothers, he was to seize on Hanover and subdue Germany entirely. An army was to be overthrown in Italy, which happened in 1809. Prussia was to acknowledge the French Republic and make peace with it, which took place April, 1795, then to extend its dominions, and afterwards the king's life to be taken and the monarchy for ever destroyed by Russia and Austria. The Russian army (or bear), as if impatient for its food, was '*to rise and devour much flesh;*' to enter Turkey and comparatively overrun the land, treading down and devouring with great fury all opposition. '*At the capital it stops. here are its decreed limits, no farther it must go. Here the Russian general divides the spoil of many cities with his army and the rich provinces of Turkey between his officers. Here he despises the oath of fidelity, and throws away the submission of a subject, proclaiming himself Emperor of Greece.*' Russia to be destroyed by Sweden—the Spanish monarchy to be destroyed and the Stadtholdership of Holland to be cut off close to the ground, which office in less than a year was actually abolished. The Popedom to be destroyed—an earthquake to swallow the parliament when sitting, and great part of London. America to go to war with England—France to lose her West Indian islands. The cardinals to quarrel, and Rome to be overthrown by an earthquake, &c. &c.

Brothers, when in London, resided for some time at 5, Beaufort-buildings, Strand, and afterwards at 57, Paddington-street, where he wrote his prophecies. He was unassuming in his manners, careful not to give personal offence, and courted retirement rather than publicity, resting happy in the complete conviction that in due time all his prophecies would be accomplished.

BROTIER, GABRIEL, was born at Tannay in the Nivernois, Sept. 5, 1723, and received the appointment of librarian of the college of Louis le Grand from the jesuits among whom he was educated. On the suppression of that order he lived in privacy, and devoted himself to literature. In 1781 he was elected member of the academy, and died in Paris, Feb. 12, 1789. His original works hardly deserve notice, and it is upon his editions of Tacitus that his reputation is chiefly founded. The Paris editions, 4 vols. 4to. 1771, and 7 vols. 12mo. 1776, differ considerably from each other, but in the English editions the two are incorporated. Brotier published also an edition of Pliny's '*Natural History*,' in 6 vols. 12mo. 1779, the '*Fables of Phædrus*,' 1783, and Amyot's translation of '*Plutarch's Lives*,' in 22 vols. 1783, revised and republished in 25 vols. 1801.

BROTULA, a genus of fishes, of the order Subbrachial Malacopterygii and family Gadidae, chiefly distinguished by the dorsal and anal fins being united with the caudal and forming one fin, which terminates in a point.

The only species known (*B. barbatus* of Cuvier) is from the Antilles.

This genus is closely allied to *Brosimia*.

BROUGH. [WESTMORELAND.]

BROUGHTON ARCHIPELAGO is a cluster of rocky islands in the Pacific Ocean to the E. of New Zealand, between 44° and 45° S. lat., and 180° and 185° E. long.; it consists of a great number of smaller islands and rocks, and a few of moderate size. The largest is Chatham Island, and next to it Pitt's Island and Cornwallis Island.

BROUNCKER, or BROUNKER, WILLIAM, Viscount Brouncker, of Castle-Lyons in Ireland (which title was conferred on his father, who had been president of Munster in 1645), was born about 1620. In 1646 he was made Doctor of Physic at Oxford. In 1660, having then succeeded his father, who died in 1645, he subscribed the declaration issued in April by the friends of the restoration. In 1662 and 1663 he was named President of the Royal Society in the charters of incorporation then granted; which office he held for 15 years. He was also chancellor of the Queen, a lord of the admiralty, and master of St. Catherine's Hospital. He died April 5th, 1684.

Lord Brouncker was a mathematician, and is the author of two remarkable discoveries. He was the first who introduced continued fractions, as follows. When Wallis was engaged upon the interpolation which led him to his well-known theorem on the quadrature of the circle, he applied to Brouncker to consider the question; and the latter arrived at the following conclusion—if π represent the ratio of the circumference to the diameter, then

$$\frac{4}{\pi} = 1 + \frac{1}{2 + \frac{9}{2 + \frac{25}{2 + \&c.}}}$$

This theorem was first given by Wallis ('Arith. Inf., Works, vol. i. p. 469) with a demonstration, the heading of which is so ambiguously worded, that we are left in doubt whether it was his own demonstration, or his own account of Lord Brouncker's. Montucla states the first in one place ('Hist. Rech. Quad. Cerc.', 1831, p. 123), and the second in another ('Hist. Math.', vol. ii. p. 355).

Brouncker was also the first who gave a series for the quadrature of a portion of the equilateral hyperbola ('Phil. Trans.', 1668, No. 34). There is also a paper of his (1673, No. 98) on the contest relative to the discovery of the Neilian parabola; and another (to which we cannot find the reference on the recoil of guns. Some letters of his to Archbishop Usher are at the end of R. Parr's life of the latter; and some to Wallis, in his 'Commercium Epistolicum' (Works, vol. iii. p. 757).

BROUSSONÉ'TIA, a diœcious tree, from whose inner bark the Japanese and the Chinese have manufactured a kind of paper and the South Sea Islanders the principal part of their clothing. The only known species forms a small tree with soft, brittle, woolly branches, and large, hairy, rough leaves, either heart-shaped and undivided, or cut into deep irregular lobes. Some of the individuals are sterile, others fruitful. The flowers of the sterile trees grow in catkins, which fall soon after their anthers have all shed their pollen; these catkins are composed of little greenish-purple membranous calyxes, each seated in the axil of a hairy bract and containing four elastic stamens. The flowers of the fruitful trees are collected into round green heads, and consist of a calyx like that of the sterile tree, with a small simple pistil occupying its centre, and having a long downy stigma. The heads gradually push forth little oblong greenish bodies, which are the ripening fruits, which at maturity have a bright scarlet colour, and are of a pulpy consistence, with a sweetish insipid taste.

Broussonetia papyrifera, or the *paper mulberry*, as it is usually called, is not uncommon in the shrubberies of this country, where it proves perfectly hardy; but it is liable to be broken by winds, and soon becomes an unsightly object. Its wood, like that of many other aërescent *Urticaceæ*, is soft, spongy, and of no value. In the tenacity of the woody tissue of its liber or inner bark it also corresponds with the general character of that order. It is from that part that the preparations above alluded to have been obtained. Sir James Smith gives the following abridgment of Kämpfer's account of the preparation of paper from its bark by the Japanese. 'For this purpose the branches of the present', after the leaves are fallen, in December, are chosen, being cut into pieces about a yard long, are boiled till the bark shrinks and is easily separable from the wood,

which is then thrown away. The bark being dried is preserved till it is wanted. In order to make paper it is soaked for three or four hours in water, after which the external skin and the green internal coat are scraped off; at the same time the stronger and firmer pieces are selected, the produce of the youngest shoots being of an inferior quality. If any very old portions present themselves they are, on the other hand, rejected as too coarse. All knotty parts, and every thing which might impair the beauty of the paper, is also removed. The chosen bark is boiled in a lixivium till its downy fibres can be separated by a touch of the finger. The pulp so produced is then agitated in water till it resembles tufts of tow. If not sufficiently boiled, the paper will be coarse though strong; if too much, it will be white, indeed, but deficient in strength and solidity. Upon the various degrees and modes of washing the pulp, much also depends as to the quality and beauty of the paper. Mucilage obtained from boiling rice, or from a root called *Orma* (Kämpf., 474), one of the mallow tribe, is afterwards added to the pulp. The paper is finished much after the European mode, except that stalks of rushes are used instead of brass wires.'

BROWER. [BRAUWER.]

BROWN, CHARLES BROCKDEN, the first eminent American novelist, in point of time, was born at Philadelphia in 1771. From childhood he manifested an engrossing love of study. He chose the law for his profession, but took a distaste to it, and was never called to the bar. Thenceforward he devoted himself to metaphysics, general literature, and politics. His first work was 'Alcuin, a wild series of speculations on the fancied evils of marriage; for which, however, he found himself unable to devise a remedy. 'Wieland,' his first novel, appeared in 1798. It was followed by 'Ormond,' 'Arthur Mervyn,' 'Edgar Huntley,' and 'Clara Howard,' before 1801; and by 'Jane Talbot,' in 1802. 'Carwin,' and some other unfinished pieces, were published after his death, in 1822. He established two literary journals: 'The Monthly Magazine and American Review,' commenced in April, 1799, and continued to the end of 1800; and 'The Literary Magazine and American Register,' commenced in October, 1803, and continued five years. In 1806 he commenced a half-yearly work, 'The American Register,' of which he lived to complete 5 vols. He published also some political pamphlets. An ostentatious and sedentary life, acting on a delicate constitution brought on consumption, of which he died, February 2, 1810. He is described as having been a man of romantic temper, benevolent heart, great invention, extensive attainments, and prodigious industry; and of most delicate and stainless morality.

Brown's novels, after being long unknown or forgotten, acquired a sudden popularity in England about 15 or 20 years ago. In style they bear some resemblance to that of Godwin, whom Brown greatly admired. For their merit we concur in the criticism of the *Encyclopedia Americana*. 'Their leading traits are rich and correct diction, variety incident, vivid scenes of joy and sorrow; a minute development and strong display of emotion; and a powerful tale of wonderful phenomena in the physical faculties and habits of man. Almost all is new and strange in his machinery and situations, but he deals too much in the horrible and criminal. Extravagant and consummate depravity actuates too many of his characters. His scenes may rivet attention, and his plots excite the keenest curiosity; yet they pain the heart beyond the privilege of fiction, and leave the imagination only a crowd of terrific phantoms.'

We may remark, in illustration of this passage, that in 'Wieland,' the story turns on the predisposition to insanity, produced by the *spontaneous combustion* of a parent upon an excitable mind, which is at last driven to crime, despair, and suicide, by the persecution of an extraordinary being—Carwin, the Biloquist, of the later fragment—possessed of extraordinary powers analogous to ventriloquism. In 'Edgar Huntley,' the whole intricacy of the story depends on somnambulism. 'Arthur Mervyn' deserves notice as an historical light, as presenting a fearfully true picture of the ravages formerly made by the yellow-fever in the American cities. The scene is laid at Philadelphia, in the prevalence of 1793. Brown's novels were reprinted at Boston in 6 vols. 8vo., 1828. (Dunlap's *Life of C. B. Brown*, 1822. *Encycl. Americana*.)

BROWN, JOHN, founder of the system of medicine termed Brunonian. It is unnecessary to trace minutely

the events of his life, as they are now of little interest. He was born in 1735 at Dunse, in Berwickshire, of parents in very limited circumstances, who designed him for the occupation of a weaver; but a love of learning, which he acquired when a child at school, determined him to study for the church. Accordingly he went to Edinburgh, and while pursuing his own studies, he taught Latin to obtain a livelihood. Having been employed to translate a medical thesis into Latin, he was induced to pay some attention to medical studies, and began to attend the lectures of several of the medical professors of the University, among others, those of Dr. Cullen, who having discovered his knowledge of Latin, made him tutor to his sons. Having completed the requisite course of medical studies, he obtained the degree of doctor from the University of St. Andrews. His improvident habits soon involved him in pecuniary difficulties, and his hasty temper in quarrels with his medical brethren. He imagined that Dr. Cullen did not assist him to the extent he might have done, and he conceived a dislike to his former preceptor and benefactor, which he displayed in a way that he thought would be most annoying and humiliating to Cullen. It is most probable that Dr. Cullen had withdrawn his countenance from Brown on account of his immoral language and conduct. Cullen's system of medicine was then in the highest repute, and Brown conceived the idea of bringing forward a rival system, which would supersede that of his master. Actuated by these motives, he proceeded to frame a system, of which, unlike the complex doctrines of the Cullenian system, simplicity should be the basis and recommendation. This was the origin of his *Elementa Medicinæ*.

The fundamental doctrine of this system was that life was a forced state, and only sustained by the action of external agents operating upon the body, every part of which was endowed, at the commencement of existence, with a certain amount of excitability. If the power or force of the external exciting agents was within a certain limit, the body was maintained in equilibrium, or in health: if the force fell short of a certain amount, the excitability accumulated in the body, and produced diseases which he termed *sthenic*; while the external agents, if in excess, exhausted the excitability too rapidly, and produced *asthenic* diseases. The means of remedying these diseases were in accordance with the views of their origin, and were equally simple and few. He discarded the numerous drugs which his predecessors and contemporaries employed, and confined himself to two—alcohol in any of its forms, as wine, brandy, &c., as a remedy for the one set of diseases, and opium for the opposite set. He made some converts to his opinions among the students, but the fatal results which followed the application of these doctrines to practice brought discredit upon them in Edinburgh; and their author, hoping for greater success, removed to London, where he died of apoplexy in 1788, without having obtained the distinction and fortune which he expected. His system never found much favour in this country, except among a few whose minds inclined them to the adoption of hasty generalizations, such as Dr. Beddoes, who edited an edition of the *Elements of Medicine*, 2 vols. 8vo. London, 1795, with a life of Brown prefixed. His whole works, with a more ample life, were published by his son William Cullen Brown, 3 vols. 8vo. Lond. 1804.

Brown's doctrines met with a more general reception in Germany and Italy; in the former country they were propagated with great zeal by Girtanner and Weikard. Rasori made them known in Italy, and at first believed them to be well-founded, but experience convinced him of their inaccuracy, and he subsequently renounced his belief in them.

BROWN, THOMAS, son of the Rev. Samuel Brown, was born on the 9th of January, 1778, at the manse of the parish of Kirkcubreck, in the Stewartry of Kirkcubright.

About a year after her husband's death Mrs. Brown removed with her family to Edinburgh. Before he was three years old Thomas prevailed on her to teach him to read; the alphabet he learned at his first lesson, and before completing his fourth year he could read in the most distinct manner any book he met with. The Bible was his lesson book. When between four and five years of age, a lady observing him alone sitting on the floor with a large family Bible on his knee, which he was dividing into different parts with one of his hands, asked him if he was going to preach, as she saw he was looking for a text? 'No,' said he, 'I am only wishing to see what the Evangelists differ in, for they don't all give the same account of Christ.'

Once when ill, about this time, he could not be made to remain at rest in bed until they brought him an immense volume of old ballads, which kept him quiet with delight until he got most of them by heart. The boy though amiable was firm, and no beating could make him ask pardon.

About his eighth year he was removed to a school at Chiswick, in which the present Lord Lyndhurst was one of his classfellows. His last school, which he left in his sixteenth year, was Dr. Thomson's at Kensington. At school, the quickness of his memory made him disregard the task of committing a passage of an author to heart; and in order to gratify his insatiable thirst for reading, he got the books of the village circulating library put under the door of the play-ground until he read them all. On his vacation visits to his uncle at Kew, he regularly read Shakspeare through.

Soon after the death of his uncle, in 1792, he returned to Edinburgh; and in the session of 1792-3 studied logic in the University of Edinburgh under Dr. Finlayson. Spending a part of the ensuing summer in Liverpool, he became acquainted with Dr. Currie, who put into his hands a copy of Stewart's 'Elements of the Philosophy of the Human Mind.' Brown was struck with an inconsistency in the doctrines of Stewart: he pointed it out to Dr. Currie, and next winter, when attending Stewart's class, he was bold enough to state it to him at the close of one of his lectures. Stewart heard him patiently, and read a letter to him from M. Prevost of Geneva, containing the same objection. Stewart held that in sleep the operations of the mind which depend on the will are suspended, along with the doctrine that memory depends on attention, the creature of the will; the objection is obvious, why then do we remember our dreams? The acuteness which exposed the error consists more in seeing it through the glozes and colouring under which it was hid, than in the objection itself. The professor invited his pupil to his house, but never disputed with him.

For several years Brown attended the lectures of Stewart, Robinson, Playfair, and Black: his evenings were generally spent in conversational discussions on all sorts of subjects with his friends Horner, Leyden, Reddie, and Erskine.

When little more than eighteen years of age, the remarks he had made in reading Darwin's 'Zoonomia' had swelled from a few notes, for an article in a periodical, to the size of a book. Before printing it, by the advice of Professor Stewart, he sent his MS. to Darwin, who received it very dryly, and answered it with no little asperity. In the beginning of 1798 appeared, in 1 vol. 8vo. 'Observations on the Zoonomia' of Erasmus Darwin, M.D., by Thomas Brown, Esq. The book was highly esteemed by his friends, and an able review of it appeared in the 'Monthly Review,'* by Dr. Duncan, who never suspected that it was a juvenile performance. The preface, which contains the germ of his doctrine of causation, was especially admired. Brown often attacks a false theory with weapons equally fallacious, and the errors and excellencies of his book have the same source.—the delight of a young and acute mind in the detection of inconsistencies. One example will be sufficient: Darwin holds that irritation, sensation, volition, and association are essential qualities of every particle of sensorial power; a dogma which Brown considered that he refuted by the inference, that every individual must in this case be made up of a multitude of distinct beings.

In 1796 he studied law for a year, a profession in which his friends augured success from his acuteness. Becoming convinced however that astuteness and not subtlety of intellect was the successful quality at the bar, and finding the joint pursuit of legal and literary knowledge incompatible with his health, he began, in 1798, to study for the profession of medicine. In 1803, when he took his diploma as M.D., his thesis 'De Somno' excited the admiration of his examiners.

About 1796 Brown joined a debating society in the University, in which he argued against theism; a circumstance which was used against him in after life. A few of the members of the Literary Society formed themselves in 1797 into the Academy of Physics, a society for the 'investigation of nature, the laws by which her phenomena are regulated, and the history of opinions concerning those laws.' The names of Erskine, Brougham, Reddie, Brown, Rogerson, Birkbeck, Logan, and Leyden were immediately enrolled,

* Monthly Review Enlarged, vol. xxix., pp. 151, 364.

and they were soon after joined by Lord Webbe Seymour, Horner, Jeffrey, Smyth, Gillespie, &c. This society gave rise to the 'Edinburgh Review,' to which Brown contributed two or three articles in the beginning, but owing to some liberties taken with a paper of his in the third number his connexion with it ceased. The first article in the second number is by Brown, on the 'Philosophy of Kant,' a subject of which he knew very little. All he knew of Kant's doctrines was derived from a fantastic French account of them; and though acute and just remarks occur in his critique, it is as bad as his preparation of writing it was imperfect.

A few months after taking his degree Brown published two volumes of poems written while he was at college. They pleased, it is said, the ladies and great people whom they praised; but poems on the 'Sun,' the 'Moon,' the 'Frown of Love,' and the 'War Fiend,' attracted little notice from any one else.

In pursuance of a system they had long adopted, the high church party, on the promotion of Professor Playfair to the chair of Natural Philosophy in the university of Edinburgh, determined to elect a clergyman to the chair of Mathematics, although the superiority of Mr. Leslie, the lay candidate, was incontestable. The approbation which this gentleman, in a note to his 'Essay on Heat,' had expressed of Hume's doctrine of causation was made the ground of a charge of infidelity. Brown published a pamphlet on the occasion, in which he proved that no such consequences flowed from the doctrine. The 'Edinburgh Review' alluded to the pamphlet in the most flattering manner, and Dugald Stewart in a note to the author assured him that he had received from it *much* pleasure and *much* instruction. A second and considerably enlarged edition was published in 1806, and in 1818 a third, in which the work was improved and matured; the fourth and last edition was published in 1835. The substance of the doctrine of causation which it contains is this:—'A cause is that which immediately precedes any change, and which existing at any time in similar circumstances has been always and will be always immediately followed by a similar change. Priority in the sequence observed, and invariableness of antecedence in the past and future sequences supposed, are the elements and the only elements combined in the notion of a cause. By a conversion of terms we obtain a definition of the correlative *effect*; and *power* is only another word for expressing abstractly and briefly the antecedence itself, and the invariableness of the relation. The words *property* and *quality* admit of exactly the same definition, expressing only a certain relation of invariable antecedence and consequence in changes that take place on the presence of the substance to which they are ascribed; with this difference, that *property* and *quality* as commonly used comprehend both the *powers* and *susceptibility* of substances—the powers of producing changes and the susceptibilities of being changed,—and with this difference only, *power*, *property*, and *quality* are in the physical use of these terms exactly synonymous. Water has the *power* of melting salt; it is a *property* of water to melt salt; it is a *quality* of water to melt salt: all these varieties of expression signify precisely the same thing—that when water is poured upon salt the solid will take the form of a liquid, and its particles be diffused in continued combination through the mass. When we speak of all the *powers* of a body we consider it as existing in a variety of circumstances, and consider at the same time all the changes, that are or may be in these circumstances, its immediate effects. When we speak of all the *qualities* of a body we mean nothing more and we mean nothing less.' For an estimate of this doctrine see CAUSATION.

In one respect this essay had a very unusual success; it convinced on one point the person at whom it aimed. On the question whether even after experience we are able to infer the relation of cause and effect as to the phenomena of the inertia of matter, the composition of forces, and such like, Professor Playfair declared himself completely convinced by his arguments.

In 1806 Dr. Brown became the partner of the eminent Dr. Gregory in his large practice. But his bias was to a literary life. In 1799 he was a candidate for the Rhetoric chair, and on the death of Dr. Finlayson for the Logic, but in both cases unsuccessfully. Owing to the decline of his health Mr. Stewart required a substitute in the Moral Philosophy class who could read lectures of his own. This Brown undertook, and lectured for a short time in session

1808-9. A similar request in the ensuing session led him to deliver a series of lectures, which were honoured by the attendance of many distinguished members of the bench, bar, and pulpit. When Mr. Stewart resumed his lectures, the students appointed Lord John Russell and others of their number to congratulate him on his recovery, and express their admiration of his substitute. Stewart, anxious to have Brown with him in the chair as assistant and successor, personally solicited every member of the town-council in his behalf, and accordingly on the recommendations of Dr. Gregory, Professor Playfair, and Lord Meadowbank he was elected in May, 1810.

Devoting himself to the cultivation of his health by air and exercise during the vacation, Dr. Brown made no preparation for the labours of the winter. He seldom began to write his lectures until after tea on the evening before the day on which he was to deliver them; he then wrote until two or three o'clock, slept a few hours, and resuming his work, wrote until twelve, when he hurried off to his class. Light reading or a walk occupied the time until the recommencement of this routine. His lecture and theory of avarice were begun after one o'clock in the morning, and finished before twelve next day. Under colour of disagreeing with Dr. Reid he covered his differences with Stewart, his colleague. Nearly all the lectures contained in the first three volumes were written during his first session, and all the rest in the next. They have been published almost *verbatim*. The following are the more important of the peculiar and new opinions which they contain. All physical inquiry has one of two ends in view—either to discover the parts of which bodies are made up, or to ascertain the changes they undergo—the elements which compose them, and their causes and effects in relation to each other. Bodies which, in relation to our sight, are one, are in reality many; they appear simple only because we cannot see the spaces which intervene between the corpuscles of which they are made up. What we can now perceive only by means of chemical and mechanical decomposition, finer powers of perception would perceive without them. But no perfection of the senses could enable us to foresee the second object of physical inquiry—the changes of bodies—in the relations of the parts to each other, and of the whole to other bodies; and on this point reason is equally incapable *a priori* of assisting us. More we can never know of any substance than the parts of which it is compounded, and the changes which it undergoes.

Every one will admit that the changes of the mind are as capable of investigation as the changes of a material object; but some will not see so readily how the mind, which is simple and indivisible, can be considered in its elementary parts. But the inquiry is not into the parts and changes of the mind itself, viewed as a substance, for this is quite inscrutable; the object of investigation is thought, which being both changeful and complex, may be examined either as to the causes of its changes or the parts of its combinations.

The phenomena of mind, which may be considered either as successive or complex, as causes and effects, or as subjects of analysis, are the qualities, states, or affections of the mind of which we are conscious, such as perception, memory, reason, and emotion. Since the states of the mind are made known by consciousness, and relate to it, a consideration of them involves an examination of consciousness and personal identity. Consciousness is a general name for all the states of which the phenomena of mind consist. The supposition of the existence of the mind in two separate states, sensation and consciousness, at the same moment, is absurd. The proposition, 'I am conscious of a sensation' involves, besides the feeling of the sensation, a reference to self. When it means more than the present feeling, it adds to it a retrospect of some *past* feeling and the relation of *both* to the mind. Belief in our personal identity he resolves into intuition.

Brown divides the states of mind, according to their causes, into external and internal states or affections; the external are the perceptions or sensations of bodies affecting the senses; the *internal affections* he subdivides into two great classes, the *intellectual* states and the *emotions*.

Dr. Reid defines perception to be the feeling of the organs of sense and the reference of it to its external object. In opposition to this, Brown maintains that the sensation is referred to its object by the power of association, and not by a peculiar mental power.

The intellectual states he divides into two generic classes, *simple and relative suggestion*. *Simple suggestion* is the name he gives to the successions and continuances of ideas and emotions, which occur according to certain primary and secondary laws. The primary are resemblance, contrast, and connexion in time or place; the secondary, by which the former are modified, are, 1st, the length of time of their co-existence; 2nd, degree of vividness; 3rd, frequency; 4th, recurrency; 5th, exclusiveness or co-exclusiveness; 6th, unequal constitutional differences; 7th, differences of temporary emotion; 8th, changes on the state of the body; 9th, general tendency produced by brain habits.

The supposed faculties of conception, memory, imagination, and taste, he reduces to simple suggestion. The arguments by which he resolves memory into simple suggestion are these—remembrances are conceptions of the past; the state of mind is simple; the conception and its relation of antecedence to the present time; conceptions and suggestions are the same, and the feeling of priority is a judgment on succession in time, attributable therefore to the capacity of relative suggestion. When combined with *direct perception* becomes *attention*, and *memory becomes recollection*, and a similar difference is produced on the phenomena of imagination, as it occurs with or without desire. Imagination without desire is *passive*, and with it, combined with simple suggestion and the feeling of relation, all its phenomena are produced. Habits in suggestion and nothing more, since the increased tendency to certain notions by repeating them is explained by the primary and secondary laws.

Relative suggestion is the feeling which arises in the mind when two or more objects are perceived or conceived, which Brown divides into relations of *co-existence and succession*. The relations which do not involve any regard to time he subdivides according to the notions, 1st, of position; 2nd, resemblance or difference; 3rd, of degree; 4th, of separation; 5th, of comprehensiveness or the relation of the whole to the parts it includes. The relation of *co-existence* is the source of classification and definition. The process of reasoning he defines to be the succession of analyses. Judgment, reason and abstraction are reduced to relative suggestion.

In 1814 Dr. Brown finished his '*Paradise of Coquetts*,' which he had begun six years before. It was published anonymously in London. Anxious to learn its fate, he came to London, and was received into the society of the principal persons connected with the Whigs in politics. The poem was reviewed in some of the reviews as the production of a public author of political eminence. In the winter of 1815 he published another volume of poetry under the name of '*The Wanderer in Norway*.' After the rising of his class he generally spent the summer in some rural retreat. Near Inishald, in Perthshire, he wrote his '*House of Spring*' in the autumn of 1816. In 1817 he gave his opinion on a case of great difficulty,—the accusation of child-murder brought against a woman who was born deaf, and in the summer, while living at the manse of Helmsdale, he wrote his '*Agnes*,' which was published in 1818. In the end of autumn, 1819, on his return to Edinburgh, in high health and spirits, being anxious to publish outlines of his lectures, he engaged in the preparation of them with great ardour. After Christmas he felt unwell, and was obliged to find a substitute to read his lectures to his class. His illness increasing, his medical advisers recommended him to take a voyage to London. He died at Brompton, near London, in 1820.

Brown's metaphysical genius was of the highest order, for he possessed its most essential faculty, the power of analysis, in a higher degree than any other philosopher of his country. His style is bad in the estimation of persons of chastened taste; but its very exuberance has given such a degree of popularity to his lectures, that they have passed through more editions than any other metaphysical work ever did in the same time; and thus the most subtle and analytic has also become the most popular and stimulating of metaphysical writers. (Welsh's *Life of Brown*.)

BROWNE, THOMAS, a learned and able antiquary and physician, has had the good fortune to find a his biographer in Dr. Johnson, whose memoir we shall do little more than compress. Browne was born in St. Michael's, Cheapside, October 19, 1681. During his childhood his father (a member of an ancient family at Upton in Cheshire) died, leaving him what in those days was considered an

ample fortune. He was educated at Winchester, and afterwards entered as a pensioner (summer) at Broadgate Hall (now Pembroke College), Oxford. Having graduated, he entered on the study of medicine, and practised for a short time in Cheshire. He then visited Ireland with his father-in-law, who had some public employment in the inspection of the fortifications of that country; and after having travelled through France and Italy he took the degree of Doctor of Medicine at Leyden. His first work, '*Religio Medici*,' which appeared successively in 1642, is supposed to have been written about seven years before, on his return to London from the Continent. It had great success, and was translated into Latin, Italian, German, Dutch, and French. In 1658 he settled at Norwich, and having obtained considerable practice was in the next year incorporated Doctor of Physic at Oxford. Notwithstanding very ungrateful remarks advanced in the '*Religio Medici*,' he married a lady who is described as both beautiful and attractive, Mrs. Milham, of a good Norfolk family. She bore him ten children, of whom a son and three daughters survived their parents. In 1666 he published with his name a work evincing most attentive reading and observation, and in which his name is principally lauded: '*Inquiries into Vulgar and Common Errors*,' which ran through six editions in 27 years. A reply to it was attempted by Alexander Ross, a great lover of the marvellous. It was immediately translated into Dutch and German, and in later years into French. In 1668 appeared '*Hydrotopia, Umbra, or a Discoverie on Sepulchral Urns*,' a treatise replete with antiquarian knowledge, and occasioned by the discovery of some sepulchres in Norfolk. To this was added a much more fanciful essay, entitled '*The Garden of Cyrus, or the Quincunxial Labyrinth; or Net-work Plantations of the Ancients, artificially, naturally, and mystically considered*.' So imbued was Browne with respect for his favourite figure, that an incensurable reader (to use the powerful language of Johnson) 'would imagine that demagoguery was the great business of the world, and that nature and art had no other purpose than to exemplify and maintain a quincunx.' These were all the works published in his lifetime. Two collections of posthumous tracts found among papers transcribed and corrected by his own hand contain the following pieces:—

1. '*Observations on several Plants mentioned in Scripture*.' 2. '*Of Garlands, and several and garland Plants*.' 3. '*Of the Fishes eaten by our Saviour and his Disciples after his Resurrection from the Dead*.' 4. '*Answers to certain Queries about Fishes, Birds, and Insects*.' 5. '*A Letter on Hawks and Falconry, Ancient and Modern*.' 6. '*Of the Symbols of the Hebrews*.' 7. '*Of Royal or gradual Verses*.' 8. '*On Languages, and particularly the Saxon Tongue*.' 9. '*Of artificial Hills, Mounds, and Barrows in England*.' 10. '*Of Trees, &c.*' 11. '*Of the Answers of the Oracle of Apollo at Delphos to Cræsus King of Lydia*.' 12. '*A Prophecy concerning the future State of several Nations*.' 13. '*Museum clausum sive Bibliotheca abscondita*.'

The above were published in one volume folio, together with works acknowledged by Browne himself, by Archbishop Tenison in 1624; to which were added in 1722 in 8vo. '*Reperitorium, or concise Account of the Tombs and Monuments in the Cathedral of Norwich*.' Other pieces by Browne published singly by his son in 1639 are: 1. '*Answers to Sir William Dugdale's Inquiries about the Fees*.' 2. '*A Letter concerning Ireland*.' 3. '*A Letter concerning the Urns newly discovered*.' 4. '*Short Structures on different Subjects*.' 5. '*A Letter in a Friend on the death of his intimate Friend*;' and in the *Biographia Britannica* is inserted a Letter containing Instructions for the Study of Physic.

In 1668 Browne was chosen honorary member of the College of Physicians, being, as his brethren expressed themselves in their vote, a man '*Pituitus et Hilaris amantissimus*.' Charles II. knighted him in 1671 at Norwich, where, after a short illness, he expired on his birthday, 1685. He was buried in the church of St. Peter Mancroft, in that city, and a short and unpretending Latin inscription on a mural tablet on the south pillar of the altar records his memory. His surviving son, Edward Browne, published an account of his own travels in Germany and Turkey, and practised as a physician with much reputation during and subsequently to the reign of Charles II.

The life of Browne by Dr. Johnson was printed in 1749.

to a second edition of 'Christian Morals,' 12mo., which first appeared in 1716 printed from the original correct MS. of the author by John Jeffery, D.D., archdeacon of Norwich. The Anglo-Latinity of Sir Thomas Browne is believed to have had a great influence on the style of Dr. Johnson. It is a style too peculiar and idiomatic ever to be generally liked, but Browne wrote at a time when our language was in a state of transition, and had scarcely assumed any fixed character. If it be blamed as too latinised, it may be answered that it would be difficult to substitute adequate *English* words for those which he has employed, and that he by no means seeks to give false elevation to a mean idea by sounding phrases, but that he is compelled, by the remoteness of that idea from ordinary apprehensions, to adopt extraordinary modes of speech. Passages occur in the 'Religio Medici' which show Browne to be a firm and sincere Christian, although perhaps not free from certain fanciful prejudices; and his 'Inquiry into Vulgar Errors' may be almost received as an encyclopædia of contemporary knowledge.

BROWNE, WILLIAM GEORGE, was born on Great Tower-Hill, London, on the 25th of July, 1768. His father, a respectable wine-merchant in London, sent him to Oriel College, Oxford, where, as the traveller frequently lamented in after-life, he met with no encouragement and little assistance, in his academical studies. After leaving the University he kept a few terms in the Temple, and attended the courts of law; but he had never any love for his profession, and when, by the death of his father, he came into possession of a competence, he devoted himself altogether to general literature, to the acquiring of modern languages, and the general principles of chemistry, botany, and mineralogy, which were afterwards very useful to him in his travels.

He was an ardent lover of liberty, and, stimulated by the deceptive dawning of the French Revolution, he republished several political tracts, with prefaces by himself, at his own expense.

His ruling passion, however, from early life had been a love of travelling, and an ardent desire of distinguishing himself as an explorer of remote and unknown countries. The publication of 'Bruce's Travels in Abyssinia,' and of the first volume of the 'Proceedings of the African Association' had the effect of determining him to attempt a passage into the interior of Africa. Accordingly he left England towards the close of 1791, and arrived at Alexandria, in Egypt, in January, 1792. After visiting the Oasis of Siwah (the antient Ammonium), he returned to Alexandria in the month of April. In May he went to Cairo, where he diligently studied the Arabic language and customs, with which he made himself so familiar as to pass for an Arab even among Arabs.

In September, 1792, he started for Abyssinia, but a Mamluk war, which had broken out in Upper Egypt, prevented him from getting farther than Assouan (Syene) and the first rapids of the Nile. On his return down the Nile he turned off at Kenné, and visited the immense quarries near Cosseir, on the Red Sea.

In the month of May, 1793, Mr. Browne set out from Egypt with the great Soudán Caravan (Caravan of the country of the Negroes), whose destination was Dar-Fûr, a Mohammedan country west of Abyssinia and north of the great western branch of the Nile—the Bahr-el-abiad, sometimes called the White River. He hoped to penetrate in this direction into Abyssinia; and the novelty of this route into the interior of Africa, and the circumstance that Dar-Fûr had never yet been visited by a European traveller, were in themselves very strong inducements. After many hardships he reached Dar-Fûr at the end of July; but soon after his arrival he fell ill, and after being plundered of almost everything, found himself a complete prisoner in the hands of the bigoted, fierce black Sultan of the country, who detained him nearly three years. During this time he lived in a clay-built hovel at Cobbé, the capital of Dar-Fûr, his principal amusement being the taming of two young lions. (For this and many other highly interesting incidents see his own account of his travels.) Mr. Browne did not reach Cairo till the autumn of 1796. During four months of this journey he could not procure a mouthful of animal food of any kind.

In January, 1797, Mr. Browne embarked at Damietta for Aleppo, and in the course of that year he visited Acre, Tripoli, Aleppo, Damascus, Halbec, &c., and then, proceeding through the interior of Asia Minor, arrived at Constanti-

nople on the 9th of December. He returned to London in September, 1798, having been absent nearly seven years. In the spring of the year 1800 he published his 'Travels in Africa, Egypt, and Syria, from the year 1792 to 1798.' As a writer Browne has no great merits;—he was frequently quaint and odd without being amusing; on not a few occasions he trespassed on delicacy, and he indulged in extravagant paradoxes. One of these paradoxes was—that the manners and customs of the people of the East were far preferable to those of civilized Europeans, and that they excelled us as much in virtue as they did in happiness. But notwithstanding these blemishes his book contains a great deal of information which was then both new and valuable, and it is impossible to read it without acquiring a strong conviction of the author's veracity. In the summer of 1800 Mr. Browne went by way of Berlin and Vienna to Trieste, where he embarked for the Levant. After seeing a great portion of Greece and Turkey he proceeded by a land journey from Constantinople to Antioch, whence he went to Cyprus and Egypt. In 1802 he visited Salonika, Mount Athos, Albania, the Ionian Islands, and then went to Venice. In 1803 he carefully examined Sicily and the Lipari islands, and then returned reluctantly to England. Of this extensive and interesting tour he himself never published any account, but seven years after his death some curious extracts from his journal were included in Mr. Walpole's 'Memoirs relating to European and Asiatic Turkey.'

After a long interval of repose Mr. Browne resolved to penetrate to the Tartar city of Samarcand and the central regions of Asia. He left London for Constantinople in the summer of 1812: at the end of that year he went from the Turkish capital to Smyrna, which city he left in the spring of 1813 to proceed through Asia Minor and Armenia. On the first of June he arrived at Tabriz, just within the frontiers of Persia, where he stayed till the end of summer. In pursuance of his plan of penetrating into Tartary he took his departure for Tehrán, the present capital of Persia, accompanied by only two servants.

Some days after their departure from Tabriz his two attendants returned to that city, where they reported that at a place about 120 miles from Tabriz Mr. Browne had been attacked and murdered by robbers, who had permitted *them* (the two servants) to escape. They brought back with them a double-barrelled gun, and a few other effects of Mr. Browne's, but no papers. At the instance of Sir Gore Ouseley, who was then on a diplomatic mission to the country, the Persian government despatched soldiers to the spot described by the two servants, with orders to bring back Mr. Browne's remains, and hunt out the assassins. According to their own report the soldiers failed in both these measures, but fully ascertained the fact of Mr. Browne's death, by finding torn fragments of his clothes, which being in the Turkish fashion and made at Constantinople were very distinguishable from Persian. They said they believed the body must have been torn to pieces and devoured by beasts of prey, and, as they are very numerous in most parts of Persia, this was probably the fact. Some time after, certain bones, supposed to be those of Mr. Browne, were brought to Tabriz, and interred there with due respect. 'The spot,' says Mr. Walpole, 'was happily chosen near the grave of Thevenot, the celebrated French traveller, who died in this part of Persia about a century and a half before.' Some doubt however must be allowed as to whether these said relics were really the bones of Mr. Browne.

As the murderers were never discovered, some awkward suspicions fell upon the Persian government, who, being then at war with the Turcomans, were supposed to be jealous of European intercourse with those hordes, or with any of the people east of the Caspian Sea. It was said at the time that men high in authority in the Shah's court had shown great anxiety about the traveller's objects and destination, and had particularly wished to know whether he was a military man or an engineer. It should be mentioned, however, on the other hand, that Mr. Browne's imprudence in wearing the Turkish dress exposed him in a special manner to the fanaticism of the Persians, who hate the Turks (the schismatic Mohammedans, as they call them) even more than they hate Christians, and have seldom any objection to send a bullet through the head of that wears a turban of the Constantinopolitan fashion. A Persian in the Shah's service said to the writer of this

article, 'Had Mr. Browne only worn an English hat he might have gone safely through Persia.' The only public fruits of this last journey are a few short extracts of letters from Mr. Browne to his friend Mr. Smithson Tennant, which also are included in Mr. Walpole's work. (See Mr. Browne's *own Book of Travels; and Memoirs relating to European and Asiatic Turkey*, edited by the Rev. Robert Walpole, 1820.)

BROWNISTS, a name given to a religious party which arose during the 16th century. The reformation recognized the principle of independent judgment in spiritual matters; and it was a natural consequence of the removal of the restraints imposed by the church of Rome, that the period in which the liberty of private judgment was first enjoyed was distinguished by great diversity and contrariety of opinions. In the 16th century contests were perpetually recurring between parties who desired a more complete reformation than had yet taken place, and those whose sympathies were connected in some degree with the past, and whose views having been satisfied by the reforms which had already been effected, wished to arrest the religious movement of the age. It was at this period that the Brownists arose; at least we have the authority of Neal and Mosheim for the fact. In Adams's *Dictionary of all Religions* it is stated that the sentiments of the Brownists had been professed in England, and churches established in accordance with their rules, before the date usually assigned, and that therefore Robert Brown was not their founder. The writers whom we have named, however, look upon him as the originator of those particular views which bound the sect together. Neal, in his *History of the Puritans*, enumerates the leading principles of the Brownists. He says, 'The Brownists did not differ from the Church of England in any articles of faith; but were very rigid and narrow in points of discipline. They denied the Church of England to be a true church, and her ministers to be rightly ordained. They maintained the discipline of the Church of England to be Popish and anti-Christian, and all her ordinances and sacraments invalid. They apprehended, according to scripture, that every church ought to be confined within the limits of a single congregation, and that the government should be democratical. The whole power of admitting and excluding members, with the deciding of all controversies, was in the brotherhood. Their church officers, for preaching the word and taking care of the poor, were chosen from among themselves, and separated to their several offices by fasting and prayer, and imposition of the hands of some of the brethren. They did not allow the priesthood to be a distinct order, or to give a man an indelible character; but as the vote of the brotherhood made him an officer, and gave him authority to preach and administer the sacraments among them, so the same power could discharge him from his office, and reduce him to the state of a private brother. Every church or society of Christians meeting in one place was, according to the Brownists, a body corporate, having full power within itself to admit and exclude members, to choose and ordain officers, and when the good of the society required it, to depose them, without being accountable to classes, convocations, synods, councils, or any jurisdiction whatsoever.' (Vol. i., p. 376. Edition 1732.)

Robert Brown, the founder of the sect, was nearly connected with the Lord Treasurer Cecil. He was educated at Corpus Christi college, Cambridge, and preached sometimes in Bennet church, where, says Neal, 'the vehemence of his delivery gained him reputation with the people.' He was subsequently a schoolmaster, and afterwards a lecturer at Islington. Neal terms him 'a fiery, hot-headed young man;' and Mosheim, 'an insinuating man, but very unsettled and inconsistent in his views and notions of things.' He went about the country inveighing against the discipline and ceremonies of the church, and exhorting the people by no means to comply with them. In the year 1580 the Bishop of Norwich caused him to be taken into custody; but Brown, acknowledging that he had offended, was released. In 1582 he published a book entitled 'The Life and Manners of True Christians;' to which was prefixed 'A Treatise of Reformation without tarrying for any; and of the wickedness of those preachers who will not reform themselves and their charge, because they tarry till the magistrate command and compel them.' He was again taken into custody, but released on the intercession of his relative the lord treasurer. Four years afterwards he again

travelled through various parts of the country preaching against bishops, ceremonies, ecclesiastical courts, ordaining of ministers, &c., for which, as he afterwards boasted, he had been committed to thirty-two prisons, in some of which he could not see his hand at noon-day. At length he formed a separate congregation on his own principles; but being forced to leave the kingdom in consequence of the persecutions which they met with, they accompanied Brown to Middleburg in Holland. Neal observes, that 'when this handful of people were delivered from the bishops they crumbled into parties among themselves, insomuch that Brown, being weary of his office, returned into England in the year 1589, and having renounced his principles of separation, became rector of a church in Northamptonshire. Here he lived an idle and dissolute life (according to Fuller) far from that sabbatarian strictness that his followers aspired after. He had a wife, with whom he did not live for many years, and a church in which he never preached. At length, being poor and proud, he struck the constable of his parish for demanding a rate of him; and being beloved by nobody, the officer summoned him before Sir Rowland St. John, who committed him to Northampton gaol. The decrepit old man, not being able to walk, was carried thither upon a feather-bed in a cart, where he fell sick and died in the year 1630, and 81st year of his age.'

After Brown's death his principles continued to gather strength in England. The Brownists were subsequently known both in England and Holland by the name of Independents.

BRUCE, EDWARD, second son of Edward Bruce of Blairhall, in the county of Elgin, was born about the year 1549; and having passed advocate at the Scottish bar, was early appointed one of the judges of the Commissary Court of Edinburgh—a court instituted soon after the Reformation in the place of the abolished court of the Official of Lothian. In this chair he succeeded Robert, Dean of Aberdeen, who had been also a lord of session, and was superseded, in January, 1576, on account of his 'inhabilitie.' The date of Bruce's appointment, however, is, from the loss of records, uncertain; but from the Pitmedden MS. (*Adv. libr.*) we learn that on the 14th July, 1584, Bruce appeared before the Judges of the court of session, and declared, that though nominated Commissary of Edinburgh in the room of the Dean of Aberdeen, yet he would take no benefit therefrom during the life of Mr. Alexander Sym, also one of the commissaries, but all fees and profits of the place should accrue to the lords of session. On the 27th July, 1583, he was made Commendator of Kinloss, under a reservation of the life-rent of Walter the Abbot of Kinloss; and about the same time he was appointed one of the deputies of the Lord Justice General of Scotland.

In 1587 the general assembly of the Scottish church having sent commissioners to Parliament to demand the removal of the prelates from that house, as having no authority from the church, and the most of them no function or charge whatever in it, Bruce rose, and directing himself to the king who was present, made a long discourse of the right they had to sit and give voice for the church in these meetings, complaining at the same time that the Presbyterian clergy had most improperly shut them forth of their places in the church, and now thought to exclude them also from their places in the state, which the prelates hoped his majesty would not suffer, but would punish as a presumptuous arrogance. Mr. Robert Pont, a Presbyterian minister, and one of the commissioners for the church on this occasion, was stopped in his reply by the king, who willed them to be quiet, and present their petition orderly to the lords of the articles, through whom they should be answered. When the petition came before the lords of articles, it was rejected without observation.

In 1594 Bruce was dispatched on an embassy to England—an employment which at that time not unfrequently devolved upon the judges of the court of session or other superior courts of justice—to complain of the secret assurance given by the Queen of England to the Earl of Bothwell, and of the harbour afforded him in her dominions; and though Elizabeth refused to deliver up Bothwell as desired, yet, in consequence of the remonstrances of the ambassadors, she commanded him to depart the realm. In 1597 Bruce was named one of the overseers of a subsidy then granted by parliament to the king for furnishing ambassadors, and other important purposes; and on the 2nd December same year he was made a lord of session. In 1598 he was again sent

ambassador to England. He failed in securing the main object of his mission, which was to obtain the queen's recognition of James as her successor in the throne; but by his skill and address he gained over many of the English to his master's service. He was once more sent to England in 1601, in company with the Earl of Mar, to intercede for the Earl of Essex; but arriving too late for their purpose, the ambassadors readily converted their message into one of congratulation to Elizabeth on her escape from the conspiracy. On this occasion Bruce had the good fortune to settle a correspondence between the kingdoms, which contributed not a little to James's peaceable accession to the English throne. In reward for these services Bruce was knighted, and created a peer by the style of Baron Bruce of Kinloss; and having accompanied James to England, he was, on 3rd March, 1603, called to the king's council board, and then made master of the rolls, when he resigned his seat on the Scottish bench*. He was succeeded in the rolls, in 1608, by Sir Edward Phillips, and died on the 14th January, 1611, in the 62nd year of his age. By his wife, who was daughter of Sir Alexander Clerk of Balbirnie, some time Lord Provost of Edinburgh, he had two sons and a daughter. Through the former he was ancestor of the noble houses of Aylesbury and Elgin; and, with the daughter, King James gave 10,000*l.* with his own hands, as a marriage portion to William second Earl of Devonshire.

BRUCE, JAMES, was born at Kinnaird, in Stirlingshire, the 14th December, 1730. He was the eldest son of David Bruce, Esq., of Kinnaird, and of Marion Graham, of Airth. When eight years of age he was sent to London to school, and after three years he was removed to Harrow, where he remained till 1746. At Harrow he became acquainted with Daines Barrington, and their friendship lasted for life. On his return to Scotland he was entered, by his father, at the University of Edinburgh, to study the law, in which he made but little progress, and he shortly after removed into the country on account of his health. In the country he followed the sports of the field, and became a bold rider and a good marksman. In 1753 he set off for London with a view to obtain leave to settle in India as a free trader. In London he made the acquaintance of Mrs. Allan, the widow of a wine merchant, whose daughter he soon after married, and became a partner in the business. A few months after his marriage his wife died; Bruce however continued for some years in the partnership, and, in 1757, he made a journey through Portugal, Spain, France, and the Netherlands, partly on business and partly for his own information. Some of his remarks on those countries are quoted in his life, by Dr. Murray, from Bruce's MS. journals. His father died in 1758, and Bruce returned to England to succeed to the family estate, with a moderate income, which, however, was considerably increased in consequence of the establishment of the Carron ironworks in its neighbourhood. In 1761 Bruce dissolved his partnership in the wine trade. He had for some time past applied himself to the study of Arabic, and had likewise turned his attention to the Ethiopic in Ludolf's works. He also improved himself in drawing, under able teachers. By means of his friend, Mr. Wood, the under Secretary of State, he became known to Mr. Pitt, who consulted him about an expedition intended against Ferrol, which however did not take place. At the beginning of 1762 Lord Halifax, at the suggestion of Mr. Wood, appointed Bruce Consul-general at Algiers, with the understanding that he was to visit the interior of Barbary, and make sketches of the antiquities which, according to Shaw, existed there. In a conversation which Bruce had with Lord Halifax, something also was said about the mys-

* We are here reminded of a mistake certainly committed by the learned Dugdale, in his chronological series of the Lord Chancellors and Lord Keepers of England, with reference to Walter de Bidun. This learned person was Lord Chancellor of Scotland about the year 1144. ('Leland Coll.', vol. ix. p. 31; Dugdale's 'Monasticon,' vol. i. p. 896). In 1177 he was elected bishop of Dunkeld; and the following year he was succeeded in the office of chancellor by Roger, second son of Robert, third earl of Leicester in England, after the conquest.

Dugdale, citing for his authority 'Lel. Col.' vol. i. p. 36, above referred to, places 'Gualterus de Bidun' among the chancellors of England, under the year 1181, or 26 Hen. II., and no doubt 'Gualterus de Bidun, regis cancellar.' is there a witness to the deed of donation by Earl Henry, son of David I. King of Scots, to the monks of Holmceuter, in Cumberland. But when we look to the parties to that deed, the occasion on which it was granted, and the co-witnesses to the chancellor, (see the grant quoted at length in Dugdale's 'Monasticon,' vol. i. p. 836, above cited,) we shall not hesitate to conclude that the latter was minister, not to the English but to the Scottish king; and consequently that Dugdale and his followers have erroneously inserted the name of Bidun among the lord chancellors of England; and this, too, years later than their cited authority would direct. Prince Henry, the son of the king in question, having died in the year 1162, and some of the MSS. thereto still earlier.

terious sources of the Nile, and of the glory that would accrue to any bold traveller who should explore them.

Bruce set out for his consulate by way of Italy, in which country he spent several months improving himself in the study of drawing and of antiquities. At Rome he made the acquaintance of Mr. Lumisden, the author of 'Roman Antiquities.' While at Naples he went to Paestum and made sketches of the temples, which he caused to be engraved and intended to publish with illustrations, but he found him afterwards complaining to his friend Mr. Strangely that some one had obtained access to the engravings at Paris, had copied them, and published them in London by subscription. In March, 1763, he finally left Italy for Algiers, where he remained about two years, during which he seems to have supported with spirit and firmness the interests and the dignity of his country, though in so doing he was not always countenanced as he expected by the ministry at home. During his stay at Algiers he learned the rudiments of surgery from the consulate surgeon. Bruce's consulship was intended from the beginning as a temporary appointment to facilitate his views of discovery, and he had been promised several months' leave of absence to travel in the interior, which however he never obtained; but in May, 1765, a successor was appointed, on whose arrival Bruce left Algiers for Tunis. Having obtained leave of the bey to travel through his dominions with an escort, he visited the country along the banks of the Bagradas, and the ruins of Thugga, Keff, and Hydrab, and thence went to Tipasa, in the province of Constantina, the capital of which, the ancient Cirta, he also visited, though he did not discover its remains, as is stated in his life, for Shaw and Sanson had visited them before him. He next went to Sitife, Medrashem, where, he says, is the sepulchre of Syphax, and thence to the Jebel Aureas and the ruins of Tezzoute, supposed to be the ancient Lambæsa, from whence he re-entered the Tunis territory by way of Kazareen and Sbeilah. He then visited the S.E. part of that state, the island of Jerbe, and proceeded to Tripoli across the desert. His description of these places in the introduction to his travels is very harsh and meagre, and at the same time he speaks rather strangely of his able predecessor Shaw. Bruce made drawings of the architectural remains, part of which are in the king's private collection. Those who feel an interest about the matter may compare Bruce's and Shaw's accounts with the lately given by Sir Grenville Temple (*Excursions in the Mediterranean*), who visited the interior of Tunisia. There is a letter from Bruce to Mr. Wood (*Appendix to Bruce's Life*, No. xxiii.), which being written at this early stage of his journeys of discovery is characteristic of the writer's style when descanting upon his own achievements. He says 'I have drawn eight triumphal arches, seven Corinthian temples, whose plans, parts, and decorations I have by very laborious searches and excavations made myself entirely master of; one large temple of the composite order in its best age, two large aqueducts, the ruins of the three principal cities of Africa, Jol, Cirta, and Carthage;' and then he adds, 'I may safely say I have not left in the place I have visited one stone undesigned whence any benefit could result to the arts. I have corrected and cleared up many passages of the Antonine Itinerary, Peutinger tables, and Ptolemy, as well as of Sanson, Nolbin, and Dibbler's French maps, all by actual observations.' &c. He then enters into a detail of his dangers and fatigues. At the bottom of the letter there is a note by the editor, Dr. Murray, who says that 'it is obvious that Bruce exaggerated the difficulties of travelling in Barbary, with a view to attract the notice of some people then in power, but with little success.' Travelling in the interior of Barbary is certainly not without danger, but Bruce apparently magnified the extent of his own discoveries. These journeys in Barbary were performed between September, 1765, and February, 1766. From Tripoli he sailed to Bengazi, whence he was driven away by famine and war, and, having embarked in a crazy Greek vessel for Candia, was shipwrecked and swam on shore at Tolometa, from whence he returned to Bengazi in October, 1766. He there remained two months in great distress, and at last escaped from that miserable country in a French vessel for Candia, where he was seized by an intermittent fever, which returned occasionally during his subsequent travels. From Candia he went to Syria, visited Baalbec and Palmyra, and resided for some time at Aleppo with Dr. Patrick Russel, physician to the factory, from whom he received further instruction in

the medical art. After spending about one year in Syria he proceeded to Alexandria in June, 1769. At Cairo he was introduced to Ali Bey, the Mameluke chief, whose Eastern ministry, Maslem Risk, had conceived a high opinion of Bruce, whom he seemed to be a great astrologer. Bruce had not fixed his plan of going to Abyssinia. He met at Cairo Father Cosligny, a Greek whom he had known at Aleppo, and who was now Archbishop under Mark, Patriarch of Alexandria. He also obtained letters from the patriarch for several Greeks who were in high stations in Abyssinia, and from Ali Bey for the sheriff of Mecca, the sultan of Massawa, and the king of Sennar. Thus provided he set off for Upper Egypt, a country which was then far from being accurately known. Whatever interest Bruce's account of Egyptian antiquities which he gives in the first book of his travels might possess at the time, has now passed away. His description is not free from inaccuracies, but he corrected several common errors; he confirmed Ptolemy in holding upon Matruhiyah as the site of Memphis, and he visited some of the painted tombs at Thebes. From the Nile he crossed the desert to Cossoir, from whence he sailed for Jidda in April, 1770; but instead of going direct to Jidda he went, according to his own statements, on the gulf to Tor, and thence along the Arabian coast to Jidda. He gives his observations on the hydrography of his course, the position and bearing of the towns and harbours. As this voyage up to Tor as well as the subsequent voyage to the straits of Bab el Mandeb, have been by some considered as fictitious, and Dr. Murray himself in his correspondence with Salt (*Hell's Life of Salt*) acknowledged that the data are contrary to their existence; but yet it is a fact that Bruce's observations are fully confirmed by the late survey of the coasts of the Red Sea (*Notes on Bruce's Cruise in the Journal of the Geographical Society*, vol. v.) made under the orders of the British government.

At Jidda Bruce received every encouragement for his Abyssinian journey. The English at Jidda, and especially Captain Price of the Lion East Indiaman, kindly exerted their influence with the authorities of that place. Metral Aga, the minister of the shereef of Mecca, originally an Abyssinian slave, was well acquainted with Ras Michael, the governor of Tigra, and at that time the most powerful chief in Abyssinia. At Captain Price's suggestion Metral Aga agreed to send one of his confidential servants, Mahomet Gibberti, a native of Abyssinia, in company with Bruce to his journey, and he wrote to Ras Michael, recommending the traveller as an English physician to his protection against the myth of Massowa, a kind of independent chief, whose cruelty and avarice were the dread of strangers. His protection of Michael Aga proved very useful to Bruce. He sailed with Gibberti for Massowa in September, 1770. On arriving at Massowa, Gibberti went on shore first and dispatched the letters to Ras Michael, after which Bruce was detained several weeks, annoyed and threatened by the myth, and in some danger of his life. Bruce exhibited his good humours and courage, and was countenanced in secret by Ahmed, the myth's squire, and a better man than his words, for whom Bruce had brought a letter from Mecca. At last messengers came to Massowa from the interior, bearing letters from Ras Michael and from some his deputy at Adowa, requesting the myth immediately to forward the foreign physician. On the 18th November Bruce left Adowa with the caravan, and after crossing the Tavana mountains arrived at Dikan, the western town of Tigra. On the 8th December he arrived at Adowa, the residence of Ras Michael, who was then absent on a campaign in Amhara. Bruce was kindly received by the deputy Janni, with whom he remained till the middle of January, 1771. He visited Ayto and other places in the neighbourhood, and continuing his journey through heré and across the Tavana, he passed over the Lamalman, a part of the Soman range, and arrived at Gondar about the middle of February. The Ras and the young king were still absent with the army, but Bruce became acquainted with Ayto Ayto, a man of rank and very partial to foreigners, who introduced him to the Begles or queen dowager, and afterwards to her daughter Omera Esther, Ras Michael's daughter, who continued Bruce's constant friend during his residence in Abyssinia.

Bruce remained nearly two years in Abyssinia, which he saw entirely in that division of the empire called Amhara, and in that part of it which borders on the lake Dembea. (About that again visiting Tigra. Concerning the physical

geography of the country his information is scanty and inaccurate. The southern provinces of Siosa, Bata, &c. he did not visit. The country was in a state of confusion, owing to a civil war between Ras Michael and other chiefs. The campaign of that year (1771), after beginning unfavourably to Michael's cause, ended by the complete triumph, which was attended by all the atrocities of revenge to which that clever but cruel chief was prone. In November of that year Bruce succeeded in reaching the sources of the Abawi, which was then considered as the main stream of the Nile; thus accomplishing what he had from the beginning fixed in his mind as the main object of his mission.

As Bruce's narrative of his residence in Abyssinia has been the subject of much controversy, and as doubts of its veracity have been by some carried to an unreasonable extent, it is well to state here what credible native witnesses who had known him at Gondar stated many years after to Salt concerning him. Salt, in his second journey to Abyssinia, became acquainted with Dofter Kethar, a learned old man, much respected in the country, who, when a young man studying at Gondar, had been intimately acquainted with Bruce, and, after a lapse of nearly forty years, still spoke of him in terms of friendly regard. He said that when Bruce first arrived at Gondar, Ras Michael was absent with the army, but that "having questioned two Greeks, Sydee Petros and Paulos, who gave a favourable account of his religion," the Ras, on his return, was induced to treat him with great attention. Bruce's reputation was greatly increased by his having cured one of Ras Michael's children, and also Ayto Ginfu, Dofter Esther's son by a former husband, of the small pox. Omera Esther, the daughter of queen dowager, and Ayto Ayto, became his warm patrons. After remaining some time at Gondar, he set out, with the king's permission, to visit the sources of the Abawi, under the protection of Fasil, the governor of Danot and Geyan, who had then made his peace with Ras Michael. Bruce went with Bologani, a young Italian artist, who attended him on his travels. After failing in a first attempt, in which they were plundered, they succeeded in a second, and returned safe to Gondar. Dofter Kethar described Bruce as a noble-looking man, who rode remarkably well on a black horse of his own; the king sometimes lent him a horse out of his stud. Bruce was greatly noticed by the king, and was one of the favourites at court. Ras Michael was also attached to him, but seldom gave him any thing. Bruce resided partly at Kassala and partly at a house near Kedin Rahmad, which was given him by the king. Kella Yassou and many other persons of rank in the country were much attached to Bruce, and when the latter quitted Abyssinia, Dofter Kethar said "he left behind him a great name." After Ras Michael's defeat and disgrace, Bruce returned home by way of Sennar. Thus far Dofter Kethar's account agrees with the main part of Bruce's narrative. But there is a considerable discrepancy in several of the details. Dofter Kethar said that Bruce did not speak the Tigra language, nor much of the Amharic; that when he arrived in the country, he could read the written characters of these books, but did not possess any great knowledge of the Gees, though in this respect, as well as with regard to the Amharic, he considerably improved himself during his stay. He was accompanied by an interpreter of the name of Michael, through whom he generally conversed. He spoke however Arabic with some of the Mussulman inhabitants. Bruce never commanded a body of horse, as he stated; the king had no body-guard, though he had a body of black horsemen from Sennar, who were commanded by Idris, a Mussulman. Bruce was not actually engaged in war, but he was present at one battle, probably the second battle of Berberatos, and this is confirmed by Bruce's original journals, quoted by Dr. Murray in his edition of the Travels, and which differ considerably from Bruce's text in the narrative. No shereef or district was ever given to Bruce, though he was said to have frequently asked for the government of Ras el Fasil, which was held at one time by Ayto Ginfu. Dofter Kethar said that Amha Yassou, prince of Siosa, never visited Gondar in Bruce's time, all connexion between Siosa and Gondar having been broken off long before. It may be observed here also that in Bruce's original memoranda (see Appendix, vol. vii. of Murray's edition) there is no mention of the visit as stated in the narrative. The description of the Galla chief Guatmal, Dofter Kethar said was strongly misrepresented; he remembered his road to Gondar, "that

the Galla was becomingly dressed, as most Gallas are when they come to court. With regard to the story of the Worari or plundering parties on a march cutting a piece of flesh from the living animal, Dofter Esther had heard of the practice, and believed it true. This has been fully confirmed since by Pearce (*Life and Adventures of Nathaniel Pearce*, edited by Hall). On being told of Bruce's disgusting description of Abyssinian banquets, Dofter Esther said he had never witnessed such practices, and expressed great abhorrence at the thought. He admitted that the licentiousness of the higher orders was carried to much greater lengths in Amhara than in Tigre (see also *Pearce's Life*, and Coffin's account of his excursion to Gondar annexed to it), but said that the scene described by Bruce was certainly greatly exaggerated, and, as a proof of its inaccuracy, he pointed at the drinking of healths, a custom unknown in Abyssinia (Salt's *Abyssinia*, ch. 8). Such was Dofter Esther's sober statement, the accuracy of which was confirmed to Salt from other quarters, among others by Sydee Paulus, already mentioned, who had lived fifty years in Abyssinia, and remembered Bruce perfectly well; and by Apostoli, another Greek, who had often conversed with Janni, Ras Michael's deputy, 'who had always spoken of Bruce with great respect' (Salt, ch. 9). Gobat (a recent missionary to Abyssinia) observes of the description of the feast as given by Bruce, 'I admit that such a feast may have taken place among the most shameless libertines, but excesses of that kind are not customary, either as to their cruelty or their indecency.' It is worth observing, that in speaking of the festivals on the occasion of Powussen's marriage, at which Bruce was present, he merely states that 'all the married women ate, drank, and smoked like the men' (vol. iv. ch. 9), but afterwards, in ch. 11, where he assumes to give a *general sketch* of Abyssinian manners, he introduces the highly-coloured description of the feast, but does not say that he ever saw it.

It appears evident from all this that when Bruce composed his narrative, he did not consult or did not scrupulously adhere to his journals, but borrowed largely from his own imagination, especially with regard to details; he confounded dates, and jumbled together distinct incidents and circumstances, either through carelessness or for the sake of effect. 'He was become old and indolent,' says his friend Dr. Murray, 'and I have reason to believe that after nearly twenty years had elapsed since his return from Abyssinia, his tale to his amanuensis resembled more that of an old veteran by his parlour fire-side in a winter evening, than the result of fresh and accurate observation. He wished to have it understood that he had omitted nothing when he travelled, but performed all—a species of ambition seldom reconcilable with fact.' (Hall's *Life of Salt*.) There are however some points in Bruce's narrative which cannot be accounted for so easily. The Axum inscription, with the pretended words 'King Ptolemy Evergetes,' seems to be one of these [Axum]. He also totally omits throughout the narrative of his journey to mention Balugani, a young Italian artist whom Mr. Lumisden had engaged for him at Rome, and who had joined Bruce at Algiers, and had been the constant companion of all his journeys as far as Gondar and the sources of the Nile, had kept his journals, assisted him in drawing, and had been evidently of material use to him. Bruce mentions in his introduction the fact of his having engaged Balugani, and afterwards says no more about him until towards the end of vol. iv. p. 248, where he speaks of his death in a vague manner, as if it had happened soon after his arrival at Gondar, somewhere about March, 1770, and several months before his journey to the sources of the Abawi; while a letter of Balugani, found among Bruce's papers, states the fact of his accompanying Bruce in that journey. (*Appendix to Bruce's Life*, xxix.) Further, as Salt remarks, he says that Abba Salama, the high priest, objected to Balugani being buried in a church-yard, and excited a tumult on the occasion. Now it is proved from Balugani's journals, found among Bruce's papers, that Balugani was living on the 14th of February, 1771, and Abba Salama had been executed for high treason on the 24th of December, 1770, according to Bruce's own statement (Salt's *Abyssinia*, ch. 8). Bruce's great ambition was to be considered the first and only European who had ever visited the sources of the Nile, and he accordingly throws discredit on the accounts of the Jesuits Paez and Lobo, who had described them before him. He also omits in his narrative to mention the fact of three Franciscan friars from the Propa-

ganda having reached Gondar only twenty years before him, where they rose for awhile into great favour, and made several proselytes to Catholicism, among others Bruce's friend Ayto Aylo and the iteghé or queen dowager. And yet in Bruce's original memoranda (*Appendix*, vol. vii.) we find it stated 'that Ayto Aylo had been converted by Father Antonio, a Franciscan, in 1750.' (Salt, ch. 10, and *Appendix III.*, where the journal of the Franciscans is translated from the Italian MS.) We might mention also the account of the late Emperor Joas's body being disinterred, about which there is a palpable inconsistency between Bruce's original memoranda and his printed narrative (Salt, ch. 10). With regard to Bruce's translation of the *Annals of Abyssinia*, Dr. Murray says, in a letter to Salt, 25th of February, 1812, 'The bulk of the facts are true, but they are often misplaced in time and local circumstance. The Portuguese and Abyssinian accounts are blended together, and the whole does not merit the title of an accurate narrative. Bruce often committed blunders in an unconscious way, particularly as to classic quotations and minute facts of ancient history, which he was not qualified by literary habits to balance and collate.' (Hall's *Life of Salt*.) The latter part of this remark leads us to observe that Bruce, though he has had a character for learning among those who have none themselves, was very far from being an exact scholar or a really learned man. His dissertations on various subjects show sometimes great ignorance, and nearly always equal presumption and deficient judgment. Such are the dissertations in the second volume on the 'Indian Trade in its earliest Ages,' on the 'Origin of Characters or Letters,' the 'Voyage to Ophir and Tarshish,' &c.

With these numerous defects, Bruce will always rank high among African travellers, and his journey to Abyssinia forms an epoch in the annals of discovery, for he was said to have re-discovered a country of which no account had reached Europe for nearly a century, and to have renewed our intercourse with it, which has been followed since by Salt and his companions Pearce and Coffin, and lately by Gobat and Rüppel. The Ethiopic MSS. which he brought to Europe formed likewise a valuable addition to our literary treasures. A list of them is given in the *Appendix to Bruce's Life*, by Dr. Murray, 4to, 1808. Bruce's courage, activity, and presence of mind are deserving of the highest praise.

The campaign of 1771 having turned against Ras Michael and that chief being deserted by his followers, and taken prisoner, the opposite faction got possession of the king's person. Bruce was now tired of this distracted country, and anxious to return home. Having obtained the king's leave after much difficulty, he set off from Koscam in December, 1771, attended by three Greeks and a few common servants. He arrived at Tcherkin in January, 1772, where he found Ozoro Esther, Ayto Confu, and several of his Gondar friends. Taking leave of them, he proceeded by Ras Feel, Teawa, and Beylah, to Sennaar, where he arrived in May. Here he was detained till the month of September, and it was with much difficulty he found means to leave that barbarous country. He proceeded northwards by Halfay, Shendi, and across the Abbara or Tarazu, to Gooz, in the Barabra country, and then plunged into the desert, which he was a fortnight in crossing to Assouan, and in which he was near losing his life through thirst and fatigue. He left Assouan in December, and after resting some time at Cairo, proceeded to Alexandria, where he embarked, in March, 1773, for Marseilles. In France he was received with marked attention by the Count de Buffon and other distinguished men. He thence went to Italy, and at last returned to England in June, 1774, after an absence of twelve years.

Bruce was presented at court, and the king, George III. received him in a flattering manner; but he obtained no more substantial rewards, except a gratuity for the drawings which he had made for the king's collection. The strange stories he told in company about the Abyssinians and the Gallas interested his hearers, but at the same time excited envy and ill-natured strictures. Some even went so far as to pretend that he had never been in Abyssinia. Bruce's haughty and disdainful manner was not calculated to soothe the criticism. After some months spent in London, he went to Scotland, where his family affairs were in great disorder owing to his long absence. Upon these he bestowed much of his time, giving up meanwhile all thoughts about

his Abyssinian journals. He married, in May, 1776, Miss Dundas, with whom he lived in quiet retirement till 1785, when she died. After this loss, and upon the advice of his friends, and especially Daines Barrington, he set about preparing his Travels for publication. This work was published in 1790, in five 4to. volumes, *Travels to Discover the Sources of the Nile, in the Years 1768-73*. The attractions of his narrative are generally acknowledged. His sketch of the character of Ras Michael has been particularly admired, and its truth is authenticated by the MSS. of the 'Annals of Abyssinia,' vol. v., which includes the history of that chief down to the murder of the Emperor Joas in 1769 (*Appendix to Murray's Life of Bruce, in 4to.*), as well as by the current report in the country.

Bruce's work was sharply assailed in the critical journals of the day, especially in the 'Monthly Review.' The Rev. Hugh Blair, Daines Barrington, and others, spoke highly in favour of it. It was translated into French by Castera, and into German by J. Volkman, with notes by J. F. Blumenbach.

Bruce died on the 27th of April, 1794, at Kinnaird, of a fall down stairs as he was going to hand a lady to her carriage. He was buried in the church-yard of Larbert, in the same tomb with his wife.

In 1805 his friend Dr. Alexander Murray published a second edition of Bruce's Travels, to which he added a biography of the traveller, and copious extracts from his original journals, which are of considerable importance. By consulting these journals, and the editor's notes and remarks in the life, the reader is enabled to separate the reality from the fiction or exaggeration which prevails in many parts of the author's narrative. Mr. Salt's two missions to Abyssinia, 1805 and 1810, having revived the discussion, Dr. Murray entered into a correspondence with Salt, which serves greatly to elucidate the question. He acknowledged that Bruce's map of Abyssinia was worth little. A third edition of Bruce's Travels, published in 1813, in seven volumes 8vo., is little more than a reprint of the previous edition. The preface by Dr. Murray, in which he adverts to Salt's correction of several of Bruce's statements, is deserving of attention.

BRUCE, MICHAEL, was born at Kinnesswood, in the par. of Portmoak and co. of Kinross, on the 27th March, 1746. His father was an operative weaver; and, in his religious sentiments, of that class of seceders called Burghers. He had eight children who, having little or nothing to inherit from their parents, were all brought up to rely on their own character and industry for their support. One of them we accordingly find an operative weaver like his father; but Michael, who was the fifth child, was destined for the office of a minister of the Gospel. To the great body of the people of Scotland that office has long been one of much reverence; and to furnish a member of the family for that holy calling is here to this day an object of nearly universal ambition. The strict and religious parents of Bruce partook in the common feeling; and in his devotion to reading from his earliest years, and his pious and domestic habits, they imagined they saw the elements of a character which would gratify their most ardent wishes. Accordingly, after bestowing on him such instruction as their humble roof and the village school could afford, his parents sent him to the schools in the neighbouring town of Kinross, and from thence, in the year 1762, to Edinburgh, where he applied himself, with equal assiduity and success, for some years to literature and philosophy, and to the learning more peculiarly necessary for his profession which he had in view.

Of those to whom Bruce was indebted for the cultivation of his mental powers, Mr. David Arnot, a farmer on the banks of Lochleven, deserves to be first mentioned. He directed Bruce to the study of Spenser, Shakspeare, Milton, and Pope, supplied him with books, and became at once a constant and judicious director of his mental efforts. Mr. David Pearson, of Easter Balgodie, a village in the neighbourhood of Kinnesswood, a man of strong parts and of a serious and contemplative turn, also contributed not a little to lead him to the love of reading and the study of poetry. In the company of these two individuals Bruce spent much of his leisure hours while in the country; and soon after his coming to Edinburgh he contracted an acquaintance with Logan, whose congenial spirit made him the intimate companion of Bruce in his lifetime, and his warm eulogist and editor of his works after his death. So long as Bruce remained about his father's house, his wants, which were

then indeed but few, were readily supplied; but after his removal to Edinburgh his resources diminished, while his wants, both physical and mental, multiplied, and his desires increased in intensity. But poverty was not the only difficulty with which the youthful Bruce had to contend. He had also the narrow prejudices of worthy but illiterate parents, who seem to have regarded general learning as unnecessary if not positively mischievous. Bruce could not but feel how unnatural these prejudices were, what injustice they did to those powers and aspirations with which he was endowed and which glowed within him. He was too dutiful a son, however, to give his parents any cause of offence, and accordingly, when about to return home from college, he took the precaution of sending to Mr. Arnot such volumes in his possession as he thought his father would disapprove of. 'I ask your pardon,' says he, in a letter to Arnot of the 27th March, 1765, 'for the trouble I have put you to by these books I have sent. *The fear of a discovery made me choose this method. I have sent Shakspeare's Works, 8 vols., Pope's Works, 4 vols., and Fontenelle's Plurality of Worlds.*

It was about the date of this last letter we find, in his correspondence, the first mention of that morbid melancholy which is frequently the attendant on a poetical temperament, and was in him also the forerunner of a fatal disease. In December, 1764, he writes to Arnot, 'I am in health, except a kind of settled melancholy, for which I cannot account, that has seized on my spirits.' In a letter to Mr. Pearson, whom we have already described, of date December, 1766, he writes, 'I lead a melancholy kind of life in this place. I am not fond of company, but it is not good that a man be still alone, and here I can have no company but what is worse than solitude. If I had not a lively imagination, I believe I should fall into a state of stupidity and delirium. I have some evening scholars, the attending on whom, though few, fatigues me, that the rest of the night I am quite dull and low-spirited. Yet I have some lucid intervals, in the time of which I can study pretty well.' In these letters he refers to his occupation of a schoolmaster, for though only a youth himself he was already a teacher of youth. He spent the winters at school or college, and in the summer he endeavoured to earn a small pittance by teaching a school, first at Gairney Bridge and afterwards at Forrest Mill, near Alloa.

'In the autumn of 1766,' says Dr. Anderson ('British Poets,' vol. ii. p. 277), 'his constitution, which was ill calculated to encounter the austerities of his native climate, the exertions of daily labour, and the rigid frugality of humble life, began visibly to decline. Towards the end of the year his ill health, aggravated by the indigence of his situation, and the want of those comforts and conveniences which might have fostered a delicate frame to maturity and length of days, terminated in a deep consumption. During the winter he quitted his employment at Forrest Mill, and with it all hopes of life, and returned to his native village to receive those attentions and consolations which his situation required from the anxiety of parental affection and the sympathy of friendship.' He lingered through the winter, and in the spring he wrote the well-known 'Elegy' in which he so pathetically describes his feelings at that time, and calmly anticipates his dissolution.

'The spring returns; but not to me returns
The vernal joy my better years have known;
Dim in my breast life's dying taper burns,
And all the joys of life with health are flown.

'Farewell, ye blooming fields, ye cheerful plains!
Enough for me the churchyard's lonely mound,
Where melancholy with still silence reigns,
And the rank grass waves o'er the cheerless ground.

'There let me sleep forgotten in the clay,
When death shall shut these weary aching eyes,
Rest in the hopes of an eternal day
Till the long night is gone, and the last morn arise.'

Of the latter part of the Elegy, part of which is just quoted, Logan says, 'It is wrought up into the most passionate strains of the true pathetic, and is not, perhaps, inferior to any poetry in any language.' This elegy, from the circumstances in which it was written, the nature of the subject, and the merit of its execution, had an unusual share of popularity. It was the last composition which Bruce lived to finish; by degrees his weakness increased, till he was worn gradually away. His poems are not numerous—for which his early death may well account—but they evince talents of a very high order. They are distinguished for their elegance and harmony; and what is singular, we find

in them, not the occasional displays of opening genius, but the sustained dignity and polish of mature life.

Soon after Bruce's death his works were subjected to the revision of his friend Logan, who gave a collection of them to the world in a small duodecimo volume; but unfortunately they were not only unaccompanied with any account of the state in which they came into his possession, or of the process observed in preparing them for publication, but mingled with the poems of other authors, without any explanation by which they might be distinguished. This error was in some degree corrected by the labours of Dr. Anderson, who gave the poems of Bruce a place, for the first time, in a collection of the classic poets of this country, and prefixed a memoir of the author. And, finally, a new edition, including several of Bruce's unpublished pieces, was brought out by subscription, in 1807, under the care of the venerable Dr. Baird, for the benefit of the poet's mother, then alive and in her ninetyeth year.

'The character of Bruce,' says Dr. Anderson, 'was truly amiable and respectable. In his manners he was modest, gentle and mild; and in his disposition friendly, affectionate and ingenuous. Tenderness, in every sense of the word, and piety, equally remote from enthusiasm and superstition, were his peculiar characteristics; and, of all the youthful sons of genius, there is none whose fate excites so tender a regret. And, as Logan observes, "If images of nature, that are beautiful and new; if sentiments, warm from the heart, interesting and pathetic; if a style chaste with ornament, and elegant with simplicity; if these and many other beauties of nature and art are allowed to constitute true poetic merit, the poems of Bruce will stand high in the judgment of men of taste."

BRUCE, ROBERT, king of Scots, was born on the 21st March, 1274. He was descended from Robert de Brus, who being brought up at the court of England with Earl David, afterwards King David I. of Scotland, became an intimate of that monarch, and received from his bounty a grant of the lordship of Annandale. His grandfather, Robert de Brus, the seventh lord of Annandale, had, on the death of his mother Isabel, second daughter of David, earl of Huntingdon, livery of her lands in England, and shortly afterwards was constituted sheriff of Cumberland and constable of the castle of Carlisle. He was then also appointed one of the fifteen regents of Scotland; and in 1264, with Comyn and Baliol, led the Scottish auxiliaries to the assistance of King Henry III. at the battle of Lewes. Robert de Bruce, the son of this baron, accompanied King Edward I. to Palestine in 1269, and was ever after greatly regarded by that monarch. In 1271 he married Margaret, countess of Carrick, in whose right he became earl of Carrick, and by whom he had 12 children.

Of these Bruce was the eldest son. He was in the tenth year of his age when his father and grandfather concurred with the other *magnates* of the realm in a solemn acknowledgment to King Alexander III. that his granddaughter Margaret, *the maiden of Norway*, was heir presumptive to the Scottish throne. Two years afterwards the king died, and Margaret succeeded to the crown; but in September, 1286, parties having now begun to be formed among the nobles with a view to a competition for the crown, Robert de Brus, the grandfather, met several important personages of the kingdom at Turnberry Castle, the seat of his son the earl of Carrick, and there entered into a league or bond to support the person who should be found the true heir to the throne. The chief competitors were Robert de Brus, the grandfather, and John Baliol [BALLIOL]. King Edward I. of England having obtained the office of umpire in this contest, on the 16th Nov. 1292, pronounced for Baliol, 'as, in all indivisible heritages, the more remote in degree of the first line of descent is preferable to the nearer in degree of the second.' It was accordingly ordered 'that John Baliol should have seisin of the kingdom of Scotland; and seisin being given, Baliol did homage and fealty to Edward for his kingdom. To avoid, no doubt, the humiliating task of doing homage to a successful rival, the aged De Brus immediately resigned the lordship of Annandale to his son Robert de Bruce, who, probably from a like motive, had about a fortnight before resigned the earldom of Carrick, which he had held in right of his wife, just deceased, to Bruce, their eldest son and heir, and shortly afterwards, retiring into England, left the administration of the family estates in the same hands.

Edward could not but see that his determination had

disappointed the powerful lords of the house of Brus; but he had already experienced their friendship, as he had no doubt heard also of the attachment of the family to the English crown, and he was now anxious to foster the submission to his award which their retirement held out. Accordingly in 1295, the same year in which the aged De Brus died, Edward appointed the father of Bruce constable of the castle of Carlisle. During Baliol's revolt the Bruces remained subject to Edward; and in 1296 they attended the parliament of Berwick, where they renewed their oath of fealty and submission to him. Even the nobler stand of Wallace did not for some time rouse their patriotism; and when those to whom the peace of the western districts had been committed summoned them to Carlisle, Bruce not only obeyed the citation and swore fidelity to Edward, but to evince the sincerity of his declaration immediately after laid waste the possessions of the knight of Liddesdale, and carried off his wife and family prisoners to Annandale. Scarcely however was this act of violence committed, when he abandoned the English party and joined the national standard, expressing at the same time his hope of absolution from the oath which he said had been extorted from him. A few months afterwards the Scots were obliged to capitulate at Irvine; and Bruce, with others, made his peace with Edward. Wallace retired into the northern parts of the kingdom with a few adherents.

The signal victory gained by Wallace at Stirling on the 12th September, 1297, induced Bruce once more to join the national standard. He took no active part in the struggle however, but while Wallace and his followers fought at Falkirk shut himself up in Ayr Castle, where indeed, by preserving the communication open between Galloway and the western highlands, he did essential service to the cause. Edward, following up his victory, marched into the west with a determination to chase Bruce, who, after burning the fortress, retreated into the fastnesses of Carrick, and Edward at length directed a willing army to return into England. In his progress he took possession of Lochmaben Castle, and wasted the estates of its lord; but among the confiscations of property which followed, the lands of Annandale and Carrick remained unalienated; a favour probably accorded to the house of Bruce for its former services to England. The defeat of the Scots at the battle of Falkirk destroyed much of the confidence reposed in Wallace; and in 1299 the bishop of St. Andrew, Bruce, and Comyn were appointed guardians of Scotland in the name and place of Baliol. It was perhaps to destroy the authority of Wallace that Bruce was willing to be associated for a time with his great rival Comyn; and having attained this end, he no less willingly resumed his former inactive course of policy, and relinquished to Comyn the direction of the new-created power. The following year Edward again invaded Scotland, and laid waste the districts of Annandale and Carrick. Bruce suffered much on this occasion; but he cautiously avoided every act of retaliation, and we find that prior to the advantage gained by the Scots at Roslin he had surrendered himself to St. John the English warden of the western Marches. The campaign of Edward in 1304, which ended in a more complete subjugation of Scotland than he had before been able to effect, justified the prudence of Bruce; for on the death of his father he was not only allowed to inherit the extensive possessions of his ancestors, but in the settlement of Scotland as a province under the English king, his opinion was much regarded.

It appears however that Bruce now maintained only the semblance of loyalty to Edward, and seeing no hope of Baliol's restoration, had formed the resolution of restoring his country to independence. Accordingly while actually engaged in assisting Edward in the settlement of the Scottish government, he entered into a secret bond of association with the bishop of St. Andrew's, as head of the Scottish church, whereby the parties bound themselves mutually to assist each other against all persons whatsoever, and neither to undertake any business of importance without the other. He had also a conference with Comyn, at which, after representing to him the miserable effects of civil discord, he proposed that they should thenceforward entertain towards each other feelings of amity and friendship. 'Support (says he) my title to the crown, and I will give you all my lands; or bestow on me your lands, and I will support your claim.' Comyn accepted the former alternative; and an agreement being drawn up in form of indenture, it was

sealed by both parties and confirmed by their oaths of fidelity and secrecy. Comyn however revealed the matter to Edward, who determined on revenge; and having one evening drank freely, was imprudent enough to discover his purpose to some of the nobles of his court. The earl of Gloucester, a kinsman of Bruce, had notice of his friend's danger, and anxious to save him, yet afraid in so serious a matter too rashly to compromise his own safety, sent him a piece of money and a pair of gilded spurs. Bruce understood the counsel thus symbolically communicated, and instantly set out for Scotland, accompanied by his secretary and a single attendant. He is said to have reached Lochmaben Castle on the fifth day after his departure from London, and thence repairing to Dumfries, where Comyn was, he sought a private interview with him. From some inward misgiving no doubt on the part of Comyn, the meeting took place in the convent of the Minorite friars. Here Bruce passionately reproached Comyn for his treachery, and after some altercation drew his dagger and stabbed him to the heart. Immediately hastening from the spot he called for his attendants, who seeing him pale and agitated inquired the cause. 'I doubt I have slain Comyn,' was the reply. 'You doubt,' cried Kirkpatrick fiercely; 'I'ae mak sicker,' and rushing towards Comyn despatched him on the spot. Almost at the same moment Sir Robert Comyn, the uncle, who came into the convent on the noise of the scuffle, shared a similar fate. The alarm soon became general; and the English judges, then holding a court in a hall of the castle, not knowing the extent of the danger, hastily barricaded the doors. Bruce, assembling his followers, surrounded the castle, and threatening to force their entrance by fire, compelled those within to surrender. He soon afterwards proceeded to Scone, the antient seat of Scottish inauguration, and was there crowned king of Scots on the 27th March, 1306. Edward had carried the *regalia* to Westminster, but their place was soon supplied. The bishop of Glasgow furnished from his own stores the robes in which Bruce was arrayed; and a slight coronet of gold being got from the nearest artist, the bishop of St. Andrew's set it on his head. The bishop of Glasgow also presented to the new king a banner wrought with the arms of Baliol, which he had concealed in his treasury, and under it Robert received the homage of those who devoted themselves to his service. The earls of Fife had from a remote antiquity enjoyed the privilege of crowning the kings of Scotland; but Duncan, the representative of the family, favouring at this time the English interest, his sister, the Countess of Buchan, with a boldness and enthusiasm which must have added to the popular interest felt for the young king, repaired to Scone, and asserting the privilege of her ancestors, placed the crown a second time on the head of Bruce. The eyes of all Scotland were now directed towards Bruce. Comyn was no more; and the brave Sir William Wallace had been executed by the English. Bruce was therefore without a rival: he was the heir of the throne, and his past conduct had given ample earnest at once of his intrepidity and prudence: he was regarded as the last remaining hope of his country.

Edward heard of the murder of Comyn and of the usurpation of Bruce when residing with his court at Winchester. He immediately despatched a messenger to the pope, to pray the assistance of the holy see; he directed the garrison towns on the Marches to be strengthened; and nominating the earl of Pembroke guardian of Scotland, he ordered an instant levy of troops for that kingdom. Proceeding to London he called together the prince his son and about 300 youths selected from the best families of England, and conferred on them the honour of knighthood amidst a pomp and magnificence well calculated to rouse the ardour of the nation. He made also a splendid banquet in honour of the new-created knights, at which he uttered a solemn vow to execute vengeance upon Bruce and his adherents. Bruce, on the other hand, had prepared no system of offensive warfare nor even of defence; his followers were few, and when he first resolved to assert his claim to the crown, he had no fortress at his command save his two patrimonial ones of Lochmabin and Kildrummie. He had seen however the success of Wallace in less happy circumstances, and he witnessed an enthusiasm for his person which he knew the prospect of success would kindle into a wide and irresistible flame. Prompted therefore perhaps by the hope of striking an early and effectual blow, he sent a challenge to Pembroke, who had established his head-quar-

ters at Perth, defying him to battle. Pembroke returned for answer he would meet him on the morrow. Satisfied with this acceptance Bruce drew off his little band to the neighbouring wood of Methven, with a view to encamp there for the night; but either from neglect or a misplaced reliance on the word of Pembroke, the customary watches were omitted or insufficiently attended to. Pembroke having intelligence of this, called out his forces towards the close of the day, and gaining the unguarded encampment without observation, succeeded in throwing the whole body of the Scots into complete disorder.

From the defeat of Methven Bruce retired with the remains of his army to the mountains of Athol, whence however they were at length compelled by want and the rigour of the season to descend into the low country of Aberdeenshire; but on the advance of a superior body of English, they took refuge in the mountainous district of Breadalbane. Nor was the party safe from attack even here. The Lord of Lorn, who was an adherent of Edward, and closely connected by marriage with the family of the murdered Comyn, hearing of the approach of Bruce, collected his dependants to the number of about 1000, and having beset the passes, obliged the Scots to come to battle in a narrow defile where the horse of the party were an incumbrance rather than a service. The consequence was inevitable; and had not the king ordered a retreat, and himself boldly taking post in the rear, by desperate courage, strength, and activity, succeeded in checking the fury of the pursuers, and extricating his men, they would have been utterly exterminated.

The king having at last rallied his men used every means in his power to re-animate their hope and to inspire them with fortitude and perseverance. After sending away his queen, the ladies who accompanied her, and some others of the party under an escort to his strong castle of Kildrummie, he determined with his remaining followers, amounting to about 200 only, to force a passage into Kintyre, and thence cross over into the north of Ireland, with the hope, as has been supposed, of receiving assistance from the earl of Ulster, or at least of eluding for a time the hot pursuit of his enemies. On arriving at the banks of Loch Lomond there appeared no mode of conveyance across the loch; but after much search, Sir James Douglas discovered a small crazy boat, by means of which they effected a passage. The party were a night and a day in getting over, the boat being able to carry only three persons at a time; but Robert beguiled the tedious hours by reciting the story of the siege of Egrymor from the romance of Ferembras. The king soon afterwards fell in with the earl of Lennox, ignorant till then of the fate of his sovereign, of whom he had received no intelligence since the defeat of Methven; and by his exhortations the royal party were amply supplied with provisions, and enabled to reach in safety the castle of Dunaverty in Kintyre, whence, after recruiting the strength and spirits of his companions, the king and a few of his most faithful adherents passed over to the small island of Rathlin, on the north coast of Ireland, where they remained during the winter. In this remote situation Bruce was long happily ignorant of the unrelenting cruelty showed by Edward to his queen, family, and friends; the confiscation of all his estates; and the solemn excommunication of himself and his adherents by the pope's legate at Carlisle. Fordun indeed relates that in derision of his forlorn and unknown condition, a sort of ribald proclamation was made after him in all the towns of Scotland as lost, stolen, or strayed.

On the approach of spring, Sir James Douglas and Sir Robert Boyd left the king and passed over to Arran, where they were joined in a few days by Bruce, from Rathlin, with a fleet of 33 small galleys. The party made a descent upon the opposite coast of Carrick, which was in the possession of the English, and finding the troops under Percy carelessly cantoned, they rushed in among them and put nearly the whole body, consisting of about 300 men, to the sword. When the news of this enterprise became known, a detachment of above 1000 men, under the command of Roger St. John, was despatched from Ayr to the relief of Turnberry, when Bruce, unable to oppose such a force, retired into the mountainous district of Carrick. The effect of his success was still further counteracted by the fatal miscarriage of his brothers Thomas and Alexander, in their attempt to secure a landing at Loch Ryan in Galloway, where the whole party were routed, several persons of note slain, and the two brothers of Bruce taken

prisoners and ordered to instant execution. When Bruce wandered among the fastnesses of Carrick, after the defeat of his auxiliaries at Loch Ryan, his army did not amount to 60 men. His own personal prowess however in an encounter which, were it not that the authority from whence it is derived has been found to be generally correct in its other particulars, would be looked upon as fabulous or exaggerated, restored the confidence of his countrymen in the ultimate success of his cause. The people of Galloway, hoping to effect the entire destruction of Bruce and his party, collected about 200 men, with bloodhounds to track the fugitives through the forests and morasses. Notwithstanding the secrecy of their preparations, Bruce had notice of his danger, and towards night withdrew his men to a position where there was on the one side a morass and on the other a rivulet which had only one narrow ford, over which the enemy must necessarily pass. Leaving his followers to their rest, Bruce proceeded to the ford, where the approaching yell of a blood-hound soon fell upon his ears, followed by the voices of men urging him forward. The bloodhounds, true to their nature, led the Galloway men directly to the ford where the king stood, who, fearing the destruction of his whole party should the enemy gain the ford, boldly resolved to defend it alone. The Gallovidians, finding on their arrival but one solitary individual posted on the opposite side to dispute their way, the foremost of their number rode boldly forward; but in attempting to reach the other side of the stream, Bruce, with a thrust of his spear, laid him dead on the spot. The same fate was shared by four of his companions, whose bodies became a sort of rampart against the others. Dismayed at so unexpected and fatal a reception, they fell back for a moment in some confusion; but instantly ashamed that so many should be baffled by the prowess of one man, returned furiously to the attack. They were however so valiantly repulsed by the king, that the post was still maintained; and at length the loud shout of Robert's followers, advancing to his rescue, warned the enemy to retire, after sustaining in this unexampled conflict the loss of 14 men. The danger to which Bruce had been exposed, and the bravery which he had manifested on this occasion, roused the spirits of his party, and called many to his standard.

Bruce indeed required all the aid he could receive; for Pembroke, the English guardian, was already advancing upon him with a great body of men, having also obtained the assistance of John of Lorn, whose followers were well acquainted with that species of irregular warfare to which Bruce was obliged to have recourse. Lorn had with him a bloodhound which it is said once belonged to the king, and was so familiar with his scent, that if once it got upon his track nothing could divert it from its purpose. This Bruce found to his experience, and well nigh fatally; for having arrived at the place where Bruce and his army lay, the bloodhound was let loose, and notwithstanding every stratagem that could be devised to elude it, the animal singled him out and led on the enemy in his pursuit, till at length Bruce and his companion (for to these two only had he successively subdivided his men) reached a rivulet, into which they plunged, and, after destroying in this way the strong scent upon which the hound had proceeded, turned into the adjoining thicket, whence he regained in safety the rendezvous of his followers. Here, having learnt the state of security into which the English had fallen, under the impression that the Scottish army was totally dispersed, Bruce collected a few men, and dashing upon a detachment of about 200 of the enemy, put the greater part of them to the sword. Pembroke shortly afterwards retired with his whole forces towards England, and after another disaster, similar to that just mentioned, retreated to Carlisle.

Bruce, encouraged by success, ventured down upon the low country, and reduced to his obedience the districts of Kyle, Carrick, and Cuninghame. Pembroke thereupon determined again to take the field; and putting himself at the head of a strong body of cavalry, he advanced into Ayrshire, and came up with the army of Bruce when encamped on Loudon Hill. Here, though his army was greatly inferior to the English, and consisted wholly of infantry, Bruce gave Pembroke battle; and so well conducted was the conflict by Bruce, that while the loss of the Scots was extremely small, Pembroke's whole forces were put to death, a considerable number being slain and many made prisoners. Three days after this Bruce encountered Mon-

thermur at the head of a considerable body of English, whom he also defeated with great slaughter. These successes proved of the greatest consequence to Bruce's cause, which was still further strengthened by the death of Edward, who died at Burgh on the Sands, in Cumberland, on the 7th July, 1307, in his progress towards Scotland. With his last breath he commanded that his body should accompany the army in its march, and remain unburied till the country was wholly subdued; but his son, disregarding the injunction, had his father's remains deposited at Westminster. The son indeed was incapable of conducting the enterprise which had devolved upon him; and after a useless and inglorious campaign he retired from the contest. For three years after this Bruce had to contend with the governors despatched by Edward, and with his other enemies in different parts of Scotland. He triumphed over all: and early in the year 1310 the clergy of Scotland assembled in a provincial council, and issued a declaration to all the faithful,—that the Scottish nation, seeing the kingdom betrayed and enslaved, had assumed Robert Bruce for their king, and that the clergy willingly did homage to him in that character.

Finding at length his authority established at home, and that Edward was sufficiently employed by the dissensions which had sprung up in his own country, Bruce resolved by an invasion of England to retaliate in some measure the miseries which it had inflicted on his kingdom. He advanced accordingly as far as the bishopric of Durham, laying waste the country with fire and sword, and giving up the whole district to the unbounded license of the soldiery. Edward at first complained to the pope, but soon afterwards made advances towards negotiating a truce with Scotland. Robert however, knowing the importance of following up the successful career which had opened to him, refused to accede to his proposals, and again invaded England. In the same year also he took various fortresses in his kingdom which hitherto remained in the possession of the enemy. The last of these fortresses was the castle of Stirling, upon which the hope of the English now depended, and Edward accordingly collected all his forces for its defence. It was on this occasion the famous battle of Bannockburn was fought, 24th June,* 1314 [BANNOCKBURN], when a complete victory was obtained by Bruce. By this event the sovereignty of Bruce was established, and the remainder of his public life was occupied in invading and defending himself from England, in negotiating treaties with that kingdom, and framing laws for the ordering and consolidating the power which he had acquired. In April, 1328, a parliament was held at Northampton, to conclude between the two kingdoms of England and Scotland a treaty of permanent peace, the principal articles of which were the recognition of Bruce's titles to the crown, the sovereignty of the kingdom, and the marriage of Johanna, the sister of the king of England, to David, the son and heir of the king of Scots.

Bruce did not long survive this event. The hardships and sufferings he had encountered brought upon him a disease, in those days called a leprosy, which the ardour of enterprise and a naturally strong constitution had hitherto enabled him to triumph over. The two last years of his life were spent in comparative seclusion in a castle at Cardross, on the northern shore of the Firth of Clyde, but in occupations every way befitting his high station. He contemplated the approach of death with calmness and resignation, and not without deep expressions of repentance for the sins he had committed, as well as sorrow for the blood which he had spilt. He died on the 7th June, 1329, in the 55th year of his age and 23rd of his reign. His heart was extracted and embalmed with a view to its being carried, according to his request, to the Holy Land; and his remains were interred in the abbey church of Dunfermline.

BRUCHSAL, a bailiwick (Oberamt) on the right bank of the Rhine, in the N. part of the Grand Duchy of Baden. It is in the circle of the Middle Rhine, is traversed by the Psinz, and contains the two towns of Bruchsal and Heidesheim, 9 vills., 3 hamlets, about 5900 families, and 30,000 inh., of whom four-fifths are Roman Catholics.

Bruchsal, the seat of judicial administration, is an old town on the Salzach. It is mentioned in ancient records between the years 937 and 996, when it was called Bruzole: it was the residence of the bishops of Spire from the year 1124.

* Incorrectly stated to be July 24 in the article BANNOCKBURN.

and came into the possession of the grand dukes of Baden in 1803. It is surrounded by a wall, is well built, and consists of the Old Town, the New Town, founded in the last century, and the suburbs of St. Peter and St. Paul, which the Salzach separates. The buildings most deserving of notice are the palace, a handsome structure in the Italian style, and its grounds, which command a magnificent prospect of the valley of the Rhine; the splendid chapel attached to the palace; spacious barracks and stables; three parochial and three auxiliary churches, the finest of which is that of St. Peter, where the last four bishops of Spire lie interred; an ecclesiastical seminary; a gymnasium; a military hospital, another well-arranged hospital for 70 patients, conducted by the confraternity of pious brothers, and provided with an anatomical theatre and a lecture-room, and a general house of correction for the circle of the Middle-Rhine. There are some salt-works outside of the town which have existed since the year 1748, and derive their supplies from the spring at Ubstadt, which lies at a distance of about 3 m. from the spot; but they are in a state of decline, and do not now produce more than 350 tons of salt per ann. In 1833 Bruchsal contained 810 houses, 1274 families, and 7129 inh., whose principal occupation is making and selling wine, and mechanical labour. In 1824 the pop. was 6686, and in 1817 5447. It is on the high road from Carlsruhe to Heidelberg, about 11 m. to the N.E. of the former and 23 m. to the S.W. of the latter: 49° 6' N. lat. 8° 32' E. long.

BRUCHUS, a genus of insects of the section Tetramera and family Rhynchophora. Technical characters:—head slightly produced, and forming a short and broad rostrum: labrum distinct: antennæ eleven-jointed, either filiform, serrated, or pectinated: eyes emarginated: thorax narrower before than behind, anteriorly rounded, posteriorly furnished with a lobe near the scutellum: elytra somewhat oblong, not reaching to the apex of the abdomen: femora of the hinder legs thick and generally dentated.

The female bruchi deposit their eggs in the yet tender germ of various leguminous plants; the seed becoming matured is devoured by the larva, which lives entirely within the seed, where it undergoes its metamorphosis. The holes so often observed in peas and other seeds of a similar nature, are those formed by the perfect insect to effect its escape; after which it is generally found in flowers.

From the habits of these insects as above related, it may easily be conceived that when numerous they become exceedingly destructive. In Kirby and Spencer's *Introduction to British Entomology* we are told that in North America a species (*Bruchus pisi*) 'is most alarmingly destructive' to peas, 'its ravages being at one time so universal as to put an end in some places to the cultivation of that favourite pulse.' This insect is less than a quarter of an inch in length, of a blackish colour, and has a grey spot at the base of the thorax in the middle, and several spots of the same colour on the elytra, which are striated. The four basal joints of the antennæ, and the anterior tibiae and tarsi are red. The thorax has a little tooth on each side, and the femora are also dentate.

Bruchus pisi is a native of our own country (having most probably been introduced in the seeds of the pea), but fortunately it is not sufficiently abundant to do much mischief.

Two other species of *Bruchus* also infest the pea, *Bruchus granarius* and *Bruchus pectinicornis*: the latter is common in China and Barbary; the former is a native of this country, and is found among beans, vetches, and other seeds, the lobes of which it devours. It very much resembles *Bruchus pisi*, but is rather less.

The true Bruchi are generally of small size.

BRUCIA, a vegetable alkali, discovered by Pelletier and

Caumont, in the bark of the false angustura, which is the bark of the *strychnos nux vomica*, and not, as was supposed when its name was given to it, of the *brucia antidysenterica*. This alkali is found combined with gallic acid, in the bark and with igasuric acid in the fruits of some of the different species of *strychnos*.

Tenard recommends this alkali to be prepared by dissolving the soluble portion of the bark in water, mixing the solution with a little oxalic acid, and evaporating it to the consistence of a syrup. This is to be treated at 32° Fahrenheit, with anhydrous alcohol, which dissolves every thing but the oxalate of brucia. This salt is then to be boiled in water with magnesia; the precipitated brucia is to be dissolved in boiling alcohol, from which it crystallizes on cooling.

When a little water is added to the alcoholic solution of brucia, and the mixture is put to evaporate spontaneously, the brucia crystallizes in colourless transparent oblique four-sided prisms. By rapid evaporation, pearly scales or crystals, in the form of cauliflowers, are obtained. These crystals contain water; they have a strong bitter taste, which remains for a long time. When the hydrate is heated rather below 212° Fahrenheit, it melts and loses about 16 per cent. of its weight of water; the fused mass is a non-crystallized body resembling wax in appearance. It is decomposed by a strong heat.

Brucia requires 850 parts of cold water and 500 of boiling water for solution. It is readily soluble in alcohol, and even in spirit of wine of specific gravity 0.88; the volatile oils dissolve a small portion of it, but neither the fixed oils nor ether take it up. One of the distinguishing characters of brucia is that the red or yellow colour which nitric acid imparts to it is changed to a fine violet by protochloride of tin. The constituents of brucia are, according to Liebig

32	equiv.	Carbon	192	equiv.	70.58
18	"	Hydrogen	18	"	6.61
1	"	Azote	14	"	5.14
6	"	Oxygen	48	"	17.67
equivalent					272
					100.00

The crystals contain 16.4 per cent of water. The salts of brucia have a bitter taste, and most of them are crystalline; they are decomposed not only by the alkalis and alkaline earths, but by morphia and strychnia, which precipitate brucia.

Nitrate of brucia, the neutral salt, does not crystallize, but gives a gummy mass by evaporation; the supernitrate is obtained by adding a little nitric acid to the neutral one. It crystallizes in quadrilateral prisms, terminated by dihedral summits. When heated, it becomes first red, then black, and afterwards detonates with the disengagement of light.

Muriate of brucia crystallizes in quadrilateral prisms obliquely truncated, which are sometimes as fine as hair. It does not alter by exposure to the air.

Sulphate of brucia. The neutral sulphate is very soluble in water, and crystallizes in long quadrilateral needles. Alcohol dissolves it in small quantity. According to Liebig, it loses 2 equivalents of water by efflorescence, and retains 2; the effloresced salt contains 12.04 of acid, 82.64 of base, and 5.32 of water. The supersulphate crystallizes readily when a little acid is added to the neutral sulphate.

Oxalate of brucia crystallizes in long needles, especially when it contains excess of acid.

Phosphate of brucia is uncrystallizable, but the super-salt crystallizes in large square tables, which dissolve readily in water, and effloresce by exposure to the air.

Acetate of brucia is very soluble, but uncrystallizable.

Medical Uses of.—The alcaloid above described exists in several species of *strychnos*, as well as in the bark of the false angustura; and as it is admitted on all hands that this bark is not obtained from any species of brucia, it has been proposed to change the name to *Caniramia* (derived from *Caniram*, and the name under which the *strychnos nux vomica* is described in Rheede, *Hort. Malabaric.*, vol. i. p. 67). This name is quite unobjectionable, as it exists in the *strychnos nux vomica* along with *strychnia*; but it is far from certain that the false angustura is the bark either of the *strychnos nux vomica* or of the *strychnos colubrina*, as conjectured by Virey. [GALIPEA.] It is most probably obtained from some undescribed South American species of *strychnos*.

Caniram acts on the human system as a violent poison,

* We recollect reading a similar account of the great destruction of the crops of peas in particular parts of North America, and as far as our memory serves the circumstances were as follows:—a certain species of bird, which was exceedingly common, was always seen among the peas, and as the farmers were not satisfied with their crops (which however were not bad), these unfortunate animals were much persecuted, indeed so much so that by various means the birds were nearly exterminated. The farmers then had no crops at all, and found out when it was too late, that the food of these birds consisted more particularly of those peas which were infested by the grubs of insects (most probably those of *Bruchus pisi*): the natural check upon those grubs then having been removed, they became so numerous as to destroy all the peas. We have mentioned this circumstance, knowing it to be a common idea among the farmers of this country that it would be a most desirable thing to exterminate various animals which they fancy useless. It is quite a common practice for farmers to give the young urchins in their neighbourhood three pence a dozen for the heads of sparrows, rooks, &c. which, though they may eat their grain, also consume multitudes of caterpillars and grubs, which, when these checks are removed, do infinitely more mischief.

and in precisely the same manner as strychnia, but more gently, being much less powerful. Hence it has been proposed to be substituted for it. The same precautions must be observed in its use, and the same contra-indications attended to. The cases in which it is most likely to prove useful are paralysis from lead, diarrhœa from atony of the intestines, and perhaps cholera asphyxia or Indian cholera. It is important to bear in mind that the anhydrous state of the salt is one-fifth more powerful than the crystallized. In case of poisoning, emetics may be given, and also tincture of bromine or iodine. [STRYCHNOS.]

BRUCKER, JAMES, a laborious scholar of the last century, was born at Augsburg, January 22, 1696. He was educated for the church at the university of Jena, where he took the degree of M. A. in 1718. In 1723 he was appointed parish minister of Kaufbevern, where he gradually acquired a reputation for learning, which led to his being elected, in 1731, a member of the Academy of Sciences at Berlin, and, soon after, to his being appointed senior minister of the church of St. Ulric, at Augsburg, where he spent the rest of his life, and died in 1770.

At an early age he applied himself to the study of philosophy, and his first work, 'Tentamen Introductionis in Historiam Doctrinæ de Ideis,' was published in 1719; it was afterwards enlarged and republished in 1723, under the title 'Hist. Philos. Doctr. de Id.' In 1731-6 he published a history of philosophy in seven volumes 12mo., from the creation to the birth of Christ, in the form of question and answer, which contains some details of literary history not to be found in his larger work. This, which was entitled 'A critical History of Philosophy from the infancy of the world down to our own age,' was printed in 1741-4, in five volumes 4to., and met with considerable success, for an edition of 4000 copies was disposed of in 23 years; and in 1767 a second edition appeared, with a sixth volume, consisting of supplement and corrections. Of his other works the chief are 'Pinacotheca Scriptorum nostra ætate literis illustrium,' 2 vols. fol. 1741-55; 'Lives of German Scholars in the 15th, 16th, and 17th centuries,' in German, 4to., 1747-9; 'Miscellanea Historiæ Philosoph. Literar. Crit., olim sparsim edita nunc uno fascio collecta,' 8vo., 1748. He undertook to superintend a new edition of Luther's translation of the Bible, but death overtook him in the course of the work, which was finished by Teller.

Brucker is now remembered by his Critical History of Philosophy. The title is ill chosen, for a discriminating and correct judgment is the very point in which he is most defective. He was very laborious, and has amassed a vast quantity of materials; but he wanted the power of arranging them and sifting the important from the trivial: consequently his work is wearisome in the extreme, from minuteness of unnecessary detail, as well as dryness of style. He seems to have the same sort of notion of his subject as a fly might have of the dome of St. Paul's, after crawling over it bit by bit; he appears not to possess clear views of it as a whole, or of the connexion of the several parts. His book, however, is remarkable and useful, if it were only as an attempt (we believe the only one) to grapple with so enormous a subject; for he gives an account of every school from the Hebrew, Chaldaic, Ægyptian, Phœnician, &c., descending through those of Greece and Rome to the sects of Christian and Judaic philosophers, the schoolmen and their successors after the revival of learning, the Saracens, and the nations of modern Asia, Indians, Chinese, and Japanese; and he finishes in North America with the Hurons. Being written in Latin, this book is accessible to many who cannot avail themselves of the labours of later German scholars. As a book of reference, therefore, it is very valuable; though the author is charged with frequent error, arising partly from inaccurate scholarship, partly from too much readiness to take his opinions at second-hand. It will be prudent, therefore, for those who are careful inquirers, to corroborate Brucker's statements by at least occasional references to the original authorities.

BRUEIS, ADMIRAL, was a lieutenant in the French navy before the revolution, and afterwards became a rear-admiral in the service of the republic. He had the command of the Toulon fleet which sailed in June, 1798, for Egypt, with General Bonaparte and his army on board. After landing the troops, Admiral Brueis anchored his fleet in Aboukir Roads close to the shore, thinking himself safe from attack. The English Admiral Nelson came in sight of the French fleet on the 1st of August, and immediately

prepared for battle. Some of the English ships steered between the French and the shore, and thus the French found themselves between two fires. [NELSON.] After a dreadful fight, most of the French ships, being disabled, surrendered. Admiral Brueis, who was on board the Orient, of 120 guns, defending himself against two English ships, was killed by a cannon shot, just before the Orient was discovered to be on fire. The Orient blew up with most of the people on board, on the evening of that day. Brueis must not be confounded with Admiral Bruix, who was minister of marine under the Directory, commanded the flotilla of Boulogne in Bonaparte's time, and died at Paris in 1805.

BRUGES, the capital city of W. Flanders, in the kingdom of Belgium, is situated in a level country, in 51° 12' N. lat. and 3° 13' E. long.; about 6 m. from the sea at Blankenberg, and 59 m. N.W. from Brussels. Its Flemish name Brugge is derived from the number of bridges which cross the canals. Bruges is the French name of the town.

Bruges is a very ancient place. In the 7th century it held the rank of a city. In 837 it was fortified by Baldwin, count of Flanders (called *Iron-arm*), in order to form a barrier to the progress of the Normans, who then ravaged Flanders. The city was surrounded by walls in 1053, and enlarged in 1270. It was almost entirely destroyed by fire on three several occasions—in 1184, 1215, and 1250. It was further enlarged in 1331 by Count Lewis de Crecy.

In order to commemorate the high degree of perfection to which the woollen manufacture had then been carried in Bruges, Philip the Good, in 1430, instituted the order of the Golden Fleece. While under the dominion of the dukes of Burgundy, Bruges became a principal emporium of the commerce of Europe. The merchants of Venice and of Genoa conveyed thither the produce of Italy and the Levant, which they exchanged for the manufactures of the N. of Europe. The tapestry of Bruges was at that time the most esteemed of any in Europe, and this reputation it long enjoyed. When, 150 years after the date last mentioned, Henry IV. of France was desirous of establishing the manufactory afterwards known under the name of *Gobelins*, he appointed a manufacturer of Bruges for its management: In addition to the woollen manufacture Philip the Good gave encouragement to many other branches of industry, and particularly to the production of silk and linen fabrics.

In 1488 the citizens rose against the Archduke Maximilian, and placed him in confinement. Having vainly solicited the king of France to support them in this act of violence, they were reduced to submission by the emperor of Germany, who marched to the deliverance of his son. On this occasion fifty-six citizens were condemned to death, and a great number were banished; the city was deprived of its privileges, and was subjected to a heavy fine. From this time the city lost its commercial importance, which was in great part transferred to Antwerp.

Bruges was bombarded by the Dutch in 1704. Two years thereafter it surrendered to the allies; and it was twice taken by the French—in 1708 and 1745, but reverted to the house of Austria. In 1794 the troops of the French republic took possession of the city, which was soon after incorporated with France, and so continued until the close of the war in 1814, when it became part of the kingdom of the United Netherlands.

The streets are narrow but neat and clean, and the houses are mostly large and well-built; many of them have an appearance of grandeur which attests the opulence of the former inhabitants. The town-hall is a good specimen of Gothic architecture. The original building was destroyed by fire in 1280, and the present hall was built on the same site in 1364. The tower contains a fine set of bells. A cathedral, built by Baldwin in the 9th century, and dedicated to saint Donatus the patron saint of Bruges, was destroyed (as some authorities state) by the French during their occupation of the city, and a public promenade has been formed on the spot which it occupied. The city is divided into seven parishes, in each of which is a Roman Catholic church, besides which there is a church for protestants. The Catholic churches contain several fine paintings and magnificent tombs; those of Charles the Bold and his daughter Mary of Burgundy, in the church of Notre Dame, are particularly handsome. In the same church is a marble statue by Michael Angelo of the Virgin and the infant Jesus.

Bruges contains a museum, a botanical garden, a cabinet

of natural history, a public library, and an academy of fine arts.

The trade of this city is facilitated by canals which communicate with various parts of Holland and Belgium. The can. from Ostend allows the passage from the sea to Bruges of vessels of from 200 to 300 tons burden. There are besides a wet dock and a dock for the building and repair of vessels, and warehouses for receiving goods in transit; the last was established in 1690.

The present manufactures of Bruges consist of linen, lace, woollen and cotton goods, silk and sugar refining, earthenware, paper, distilling, and other minor branches of industry.

The pop., which in 1814 was 33,214, had increased in the 1st of January, 1835, to 41,214 souls. A statement published by the Dutch government gives the number of births and deaths from 1780 to 1813, the former being 736,744, and the latter 176,516, shew a natural increase of the pop. in 134 years of only 5213, or a mean annual increase of two in a thousand.

The college of Athanasius of Bruges contained in 1802 121 scholars, 24 of whom received gratuitous instruction; 22 of the scholars received only elementary instruction, and only ten were attending the class for the higher branches of mathematics.

The city is badly supplied with water, which is conveyed to the houses in casks from the canals.

BRUGMANNIA. To this genus belongs the plant commonly called in the gardens *Datura arborea*, and also the *Brugmansia* of the Columbians. This latter, like the rest of the natural order Solanaceae, is narcotic in a high degree. We extract the following account of it from the Botanical Register. 'This remarkable plant is a native of elevated and cold situations in the provinces of Yuma, Neusa, Huacabaco, Cuzco, and Hunabaco, where it grows among rubbish; it is also found near the village of La Cruz and on the banks of the river Mayo, between Atiquipa and Pacha in New Granada, where it was first by Humboldt and Bonpland at nearly 7000 feet above the sea. It begins to flower in June and ceases in November. By the Peruvians it is called *Maripondia encarnada* and *Cassipoula encarnada*; by the Columbians, *Bowackers*. Its stature varies from 10 to 12 feet, the stem being generally unbranched and terminated by a roundish leafy head. The flowers are either a bright yellowish-orange colour or a deep orange-red; we believe they change from the former to the latter. They are succeeded by an oblong, smooth, yellow, pendulous capsule, which is as much as eight inches long. The seeds, like those of the common *Stramonium*, are narcotic in a high degree. In the Temple of the Sun, in the city of Bogamota, there is a famous amulet, the priests of which inspire themselves with the intoxicating seeds of this plant, just as the Priestsess of Delphi is said to have received the influence of her God by chewing laurel leaves and inhaling a gaseous vapour. From the fruit itself the Chiriquians prepare a drink called *Touga*, which when weak is merely soporific, but drunk in stronger doses produces frenzy, which can only be removed by administering immediate draughts of cold water.'

This plant has lately been introduced into the gardens of this country, where it grows hardy during the summer, but requires the protection of a greenhouse in winter.

BRUHL, HENRY, COUNT VON, was born in August, 1760. His father was councillor of the palace of Saxe-Weissenfels. Henry entered as page into the service of Augustus II., elector of Saxony and king of Poland against his father, and became his chamberlain. After the death of Augustus, 1763, Bruhl, who had charge of the crown jewels at Warsaw, set off with them for Dresden, where he delivered them to the new elector Augustus III., and assisted him, by his manoeuvres, in ascending the throne of Poland. From that time he became the king's favourite, and having obtained the dismissal of his first Count Zulkowski, he remained sole ruler of the weak monarch, whom he kept in a state of complete ignorance. Bruhl lived in great splendour; his establishment was larger than the king's, and he kept above 200 servants. 'Of all men of his age, says Frederick II. of Prussia, 'he had most watches, dresses, lace, shoes, slippers, and slippers. Every body here put him among the number of those debauched and perfumed heads of which he was not afraid.' The king was indolent in person, and Bruhl, who took care not to

disturb his splendor and always to supply him with money, was obliged to borrow to such a degree, that the treasury became bankrupt at last. Bruhl involved Saxony in a war against Frederick II., who made the whole Saxon army prisoner in the camp of Pirna, and took Dresden, while the king and Bruhl escaped into Poland. After the peace they returned to Dresden, where Augustus soon after died. Bruhl was disliked by both Peter and Sava, and the new elector dismissed him from his office. Bruhl died in October, 1794. He had amassed great wealth, which he left to his children; his fine library of 30,000 volumes was purchased by the elector for 50,000 rix-dollars. His son Frederick Louis wrote several German plays, which were performed at Dresden in 1782, 80, in 2 vols. 8vo.

BRUNGOY (PIERRE), Father Bruny belonged to that order which cultivated the arts and sciences with a success unequalled by any other religious community, especially so far as regards the universality of their engagements and the extent of their labours. It is remarkable, however, that the Jesuits are unable to claim one illustrious writer or one great work in the republic of letters, and that the little band of 1000 Royal confessors presided the world, in a few years, with productions incomparably superior in any which had ever emanated from the whole body of the disciples of Loyola during the long term of their existence.

Brunoy was born at Rouen in 1688, and entered the society of the Jesuits in 1704. He was subsequently intrusted with the education of the prince of Talmont, and became a contributor to the Journal of Trevoux. He first introduced himself to the public by 'Thoughts on the Decline of Latin Poetry,' and afterwards edited 'The History of Tamaricani,' written by Margot, a brother Jesuit, and printed at Paris in 1705, 2 vols. 12mo. Shortly after his superiors wished to him the continuation of 'The History of the Anglican Church,' of which work he had already published 11 volumes and was completing the 12th, when he died at Paris on the 16th April, 1762, in the 74th year of his age.

Among all who have done honour to the Society of Jesus, both by their moral character and their literary talents, Father Brunoy stands preeminent. With the study of literature he combined that of the mathematics, which he taught from 1725 to 1730, and it is in this circumstance that we are indebted for his discourse 'Upon the Utility of Mathematics as connected with the Belles Lettres.' His works consist of—1. 'A Life of the Empress Catherine,' Paris, 1723, 12mo., imitated from the Latin of Father Ceva; 2. 'An Apology for the English and French, or Remarks upon the work (by Mairan) entitled "Letters upon the English and French,"' (1726, 12mo.); 3. 'Review of the Poem upon Grace, Brussels, Paris, 1723, 8vo.; 4. 304 Volumes in 12mo., containing 'Translations and Analyses of the Greek Tragedies, accompanied by Dissertations and Remarks upon the Greek Theatre,' Paris, 1747; a work which, although highly and justly esteemed for the great learning which it exhibits, is deficient in simplicity and precision of style, and even occasionally betrays the want of a perfect comprehension of the original text; these errors have been removed in the editions of 1750-1769, 10 vols. 10. 5. 'A Collection of various Pieces in prose and verse,' 11 vols., Paris, 1741, including discourses, epistles, tragedies, comedies, Isaac, Jonathan, the Coronation of David, Pandora's Box, Pluto, &c. &c. 6. In addition to the above works, Brunoy also made a new edition of J. Murgud's 'Treatise upon French Poetry,' Paris, 1724, in 12mo. He also translated two Orations of Father Porée, one upon public exhibitions, and the other upon the question whether the monarchial or the republican form of government was best fitted for forming the heroic character. 7. Brunoy completed, in conjunction with Father Rouillé, 'The Revolutions of Spain,' by Father Orleans, Paris, 1734, 3 vols. etc.; assisted in compiling 'The Memoirs of Trevoux,' and reviewed the 'History of Rome' of Father du Coudray, Paris, 1734, in 10mo.

BRUN, CHARLES LE, the son of a sculptor of Scotch extraction, was born at Paris in the year 1610. The singular merit of his juvenile sketches attracted the attention of the Chancellor Seguier, who undertook the charge of his education, and placed him, at the age of eleven, with Voiture, and afterwards with Nicholas Poussin. He remained in Italy six years, studying the antique and the works of the

old masters. He assiduously cultivated a knowledge of history and costume. On his return to Paris in 1648 he was received into the Academy. From this time employment and honours poured in upon him. Having attained the highest rank in the Academy at Paris, he was appointed principal painter to the king, was invested with the order of St. Michel, and was ultimately named Prince of the Academy of St. Luke at Rome, although absent, and a foreigner. A change in the ministry, which had so long favoured Le Brun, carried political animosities into the painter's studio, and, although still honoured by the countenance of the king, he died of chagrin and vexation at the continued annoyances which he met with at court, in 1690, leaving a widow, but no children.

Le Brun was an industrious and a learned artist; his drawing is bold and correct, and his design often replete with life and magnificence. But the passion expressed in his countenances is neither refined nor elevated, and the grandeur of his pictures belongs rather to the physical than the moral development of the subject. His groups are well arranged, and natural; the action of individual figures is also natural; and yet both are frequently injured by an affectation of grace in some part or other. His works are principally at Paris. The Battles of Alexander, which are so well known by engravings, are very characteristic specimens of his style, and would alone entitle him to be reckoned among the most eminent painters. The Passage of the Granicus, and the Battle of Arbela, are works of great power and feeling. His defects of colouring have been partly attributed to his neglecting to visit Venice; but his excusers have forgotten that Giorgione and Titian had no Venice to seek fine colour in.

His facility in drawing was such, that having procured the delay for one moment of the car which conveyed the Marquise de Brinvilliers to execution, in 'four strokes of the pencil,' says his French biographer, he sketched a likeness. With the brush he was equally ready. Louis XIV., who daily spent two hours in watching his progress, while painting the 'Family of Darius' at Versailles, desired him to paint at once the head of Parysatis, which he executed with so much success as to extort an expression of delight from Bernini, who was not among the number of his friends.

BRUNCK, RICHARD FRANÇOIS PHILIPPE, was born at Strasburg, December 30th, 1729. He was educated by the Jesuits in the college of Louis le Grand at Paris, and is reported to have made considerable progress in the several branches there taught. An early engagement in the affairs of active life suspended his taste for literature while he was employed as military commissary. He had attained his thirtieth year, when, during a residence in winter-quarters at Giessen, in one of the campaigns in Hanover, he happened to lodge in the house of a professor, who revived in him a love for letters. On his return to Strasburg he devoted himself to study, to which the possession of an easy fortune allowed his entire application; and the professor of Greek, whose lectures he attended, being a profound grammarian, Brunck quickly became well versed in that language. No sooner did he feel his own strength than he distinguished himself by his criticisms; but his emendations, which are sometimes happy, are always hazardous; and acting under a confirmed belief that the errors of the text in all cases proceeded from the fault of copyists, he corrected with a more 'slashing hook' than even Bentley himself ventured to employ. His first work was an edition of the Greek Anthology, published under the title of *Analecta veterum poetarum Græcorum*, Strasburg, 3 vols. 8vo., 1776; which contains, besides the epigrams usually given in an Anthology, several of the minor Greek poets, Anacreon, Callimachus, &c. entire. Anacreon appeared in a separate edition, in 1778. In 1779 he edited some Greek plays, which excited a great desire for the appearance of a complete edition of Sophocles which he had announced. His favourite author, Apollonius Rhodius, employed him in 1780, and was followed in 1783 by an Aristophanes, which superseded all its predecessors, and has since in turn been entirely superseded by other editions. In the year following he prepared the fragments of Theognis, Solon, Simonides, and other didactic and moral Greek poets, under the title of 'Ἐπιγραφαὶ Παισιῶν, sive *Gnomici Poetæ Græci*, 1 vol. 8vo. In 1785 he issued an edition of Virgil, in which he was by no means sparing of the established text. His Sophocles at length attracted the attention of scholars in 1786, and may be considered as the

work upon which his reputation is chiefly founded. Subsequent critics however have found plenty to do with Sophocles notwithstanding the labours of Brunck, and one part of their business has been to restore the MS. readings which this daring editor had replaced by his conjectures. It appeared at first magnificently printed in 2 vols. 4to.; a limited impression in 3 vols. 8vo. followed in 1784, and there is a third edition, under his own eye, in 4 vols. 8vo., 1786-89. He prepared a copy of Plautus for the Biont edition of the classics in 1788. On the breaking out of the revolution he embraced the popular side with ardour; and notwithstanding Louis XVI., in return for a presentation copy of the quarto Sophocles superbly printed on vellum, had conferred on him a pension of 2000 francs, Brunck enrolled himself among the earliest members of a revolutionary society established at Strasburg. During the Reign of Terror he was imprisoned at Besançon, and did not obtain his release till the fall of Robespierre. Reverses of fortune, produced by the public troubles, obliged him in 1791 to dispose of part of his library, and in 1801 of the remainder. His taste for Greek literature became extinct with the loss of the first portion of his books, of which he never spoke without tears. He still however retained some fondness for the Latin poets. In 1797 he printed an edition of Terence in quarto; and at the time of his death, which occurred on the 12th of June, 1803, he was engaged in superintending an edition of Plautus. His diligence was most remarkable. Instead of referring the printer to any former edition, he always transcribed the entire text of the author upon whom he was engaged. Thus he twice copied Aristophanes, and Apollonius at least five times. Many of these copies, together with several other MS. papers, are still preserved in the Bibliothèque Royale at Paris. The margins of his books were crowded with conjectures, which in numberless instances showed the boldness rather than the judgment of their author. He was a member of the Academy of Inscriptions and Belles Lettres, and also of the French Institute.

BRUNE, MARSHAL, was born at Brives, dep. de la Corrèze, in 1736. His father was an advocate, and Brune studied the law at Paris. When the revolution broke out he entered the army, and served under Dumourier. He was quickly promoted, and was general of brigade in the army of the interior under Bonaparte in 1795. The following year he joined the army of Italy, and served in the division of Massena. After the peace of Campoformio he was sent by the Directory as commander-in-chief of the army which invaded Switzerland. [BERN.] After the fall of Bern he took the command of the army in Italy, and obliged the king of Sardinia, who was the forced ally of France, to deliver into his hands the citadel of his own capital, Turin. After having thus prepared the fall of the monarchy, he was replaced by Joubert, who finally effected it in December, 1798. Brune was next sent into Holland, where, in 1799, he defeated the Russians on the Helder, and obliged the duke of York and the English army to evacuate the country. In the following year he returned to Italy, when, in conjunction with Macdonald, he forced the passage of the Mincio in December, 1800, and afterwards concluded an armistice with the Austrian General Bellegarde, preparatory to the peace of Luneville. Brune, on his return to Paris, was appointed councillor of state, and was afterwards sent by Bonaparte as ambassador to Constantinople, where he succeeded in establishing new relations between France and the shah of Persia. He returned to France in 1805, being appointed one of the marshals of the French empire. He commanded for a while the camp at Boulogne. Being sent to Hamburg in 1807, as governor of the Hanseatic towns and commander of the reserve of the grand army, he had a long interview with Gustavus king of Sweden, near Anklam, in Pomerania, which seems to have given rise to suspicions on the part of Napoleon. In the surrender of the island of Rugen by the Swedish General Toll, agreeably to a convention with Marshal Brune, the latter happened to omit in the text of the convention the titles of the Emperor Napoleon, and mentioned simply the French army and the Swedish army as parties to the agreement. Napoleon, who was highly offended, sent Brune his recall, styling his conduct 'a scandal never seen since the time of Pharamond.' From that time Brune lived retired and in disgrace, till Napoleon's first abdication, when he made his submission to Louis XVIII., who gave him the

cross of St. Louis. During the 'hundred days' he joined Napoleon, who sent him to command a corps of observation on the Var. After the battle of Waterloo he proclaimed the king, and, leaving his corps, was travelling from Toulon to Avignon on his way to Paris, when he found himself in the midst of the reaction that took place in the southern provinces at that time. A furious mob forced its way into the inn at Avignon, where Brune was, and after insulting him, and upbraiding him with having been a terrorist, and having taken part in the massacres of August and September, 1792, to which Brune calmly replied that 'he was at that time fighting on the frontiers against the enemies of his country,' they shot him in the room of the inn as he was standing with his back turned to the fire-place. His body was then dragged through the streets, and thrown into the Rhone. (*Nouvelles Causes Politiques et Criminelles célèbres.*)

BRUNEHAUT, the younger daughter of Athanagilde, king of the Visigoths of Spain, married, in 563, Siegbert, the Frankish king of Metz or Austrasia. Her eldest sister Galsuinda, married Chilperic, Siegbert's brother and king Soissons. Galsuinda was soon after murdered by Fredegonda, the mistress of Chilperic, who then married her. Brunehaut, determined to avenge her sister's death, induced Siegbert to make war upon his brother, and Chilperic only obtained peace by giving up part of his states. Other wars took place between the brothers, at the instigation of their wives, and in the end Chilperic having lost his territories, was besieged by Siegbert, in the town of Tournai, when two assassins, hired by Fredegonda, murdered Siegbert in his camp, 575. Upon this Chilperic came out of Tournai, and made Brunehaut and her son Childebert prisoners. Meroveus, son of Chilperic, falling in love with Brunehaut, enabled her to escape into Austrasia, and Meroveus was in consequence murdered by Fredegonda. Chilperic himself was soon after murdered, 584, and by the order, it was believed, of Fredegonda, who remained regent and guardian of her infant son Clotarius II. The history of the Merovingian kings is a continual succession of such atrocities. Brunehaut and her son Childebert now made war upon Fredegonda, who at last was obliged to resign her authority, 585. In 596 Childebert died, leaving his sons Thierry and Theodebert II. under the guardianship of his mother Brunehaut. From this time a long struggle began between the nobles of Austrasia and Brunehaut, who wished to reign without control, which lasted nearly 20 years. Thierry and Theodebert made war against each other, and Brunehaut sided with the former, who took his brother prisoner. Theodebert was murdered at Cologne, as some historians report, by order of Brunehaut. Clotarius, the son of Fredegonda, took advantage of these dissensions, and, on the death of Thierry, in 615, seized upon Austrasia and Burgundy, and thus reunited under his sceptre the whole kingdom of the Franks. Brunehaut, being taken prisoner by Clotarius, was condemned to a most horrible death. After suffering for three days all kinds of insults, she was tied to a horse's tail and thus driven about till she was dead, when her body was burnt and the ashes scattered to the winds. Her old enemy, Fredegonda, had died many years before, in 597. The true character of Brunehaut has been the subject of much controversy. Several of her contemporaries, such as St. Gregory of Tours, and Pope Gregory the Great, speak highly of her, while those who asperse her memory, such as Fredegarius, Aimoin the monk, &c., lived at least a century after her. Bossuet maintains that she was sacrificed to the ambition of Clotarius, and probably also to the rancour of the nobles of her own dominions. Pasquier, Velly, Du Tillet, and other writers, have also taken the defence of Brunehaut. The part of her reign against which charges have been raised is that commencing with the time of her regency in the name of her two grand-children, when she had to struggle against the nobles. A monument was raised to her in the church of St. Martin of Autun. She is said to have promoted the preaching of Christianity in England.

BRUNELLESCHI, FILIPPO. Had this artist no other claims to notice than those arising from a single work, the dome of Santa Maria del Fiore, or the cathedral at Florence, is one of those memorable achievements which suffice to perpetuate a name. Brunelleschi was born at Florence, in 1375 or 1377, and was descended from a family which had produced several eminent individuals. His father, who followed the profession of notary in that city, designed to educate him either for the same, or for the medical science.

Filippo was accordingly initiated in those studies which would prepare him for whichever of the two pursuits he should adopt; yet although not deficient in application, the natural bias of his mind diverted his faculties into another direction; and he at length prevailed upon his father to place him with a goldsmith. At that period the goldsmith's art was altogether different from what it now is: it comprised every branch of working in metals for ornamental purposes, and was intimately allied with design generally, and with sculpture in particular, of which latter it might in fact be considered a direct branch. In fact, it frequently served as a kind of apprenticeship to the last mentioned art, as happened in Brunelleschi's case. Led on both by his own talent and the intimacy he had formed with the celebrated Donatello, he applied himself to sculpture, and with such success that he was admitted as one of the competitors in the designs for the bronze gates of the Baptistery at Florence.

After this he began to think of signalizing himself in architecture, and as Donatello was about to proceed to Rome, resolved on accompanying him thither for the purpose of acquainting himself with the ancient buildings in that city. Here he perceived what a career was opened to him who should endeavour to revive a style of architecture altogether so different from that which had prevailed for so many centuries. In 1407 he returned to Florence, where it was proposed to complete the structure of Santa Maria, which had been commenced by Arnolfo di Lapo shortly before his death, in 1300, that is about the year 1295, or, as some say, 1298, and which was afterwards carried on by Giotto. With this view the most eminent architects were invited from all parts to devise in what way it would be practicable to cover the spacious octangular area between the four branches of the cross. How it was originally intended to effect this, in accordance with the other parts of the edifice, does not now appear. Owing to the magnitude of the space to be covered by a single vault, very formidable difficulties presented themselves, and the possibility of doing it was questioned; for with the exception of the dome of Santa Sophia, the diameter of which is something less, there was no precedent or example by which to be guided, unless it was by St. Mark's at Venice, and the cathedral at Pisa, which however are so different that they could not have afforded much information for the purpose. While the rest were engaged in fruitless debates, Brunelleschi was assiduously employed in maturing his plans, models, and scheme of operations, and contented himself with pointing out the hazardousness of a project which he had assured himself he should be able to accomplish. Twice during these protracted consultations he quitted Florence, for the purpose of leaving all his rivals in perplexity, and each time he was solicited to return. At length after a multiplicity of proceedings, into which our limits render it impossible to enter, Brunelleschi's model, explaining the whole mechanism and construction of his intended cupola, was publicly exhibited, and convinced every one of his success. He was commissioned to commence the work, but it was soon determined to associate with him a colleague, no other than Lorenzo Ghiberti. Upon this his indignation knew no bounds; he resolved upon abandoning both the work and the city itself for ever; nor was it without extreme difficulty that his friends prevailed upon him to change his determination. Resolved upon manifesting Ghiberti's incapacity, which he knew would betray itself, should he be left without assistance, he feigned illness. This device succeeded, for Ghiberti being unable to proceed alone was removed, and Brunelleschi was constituted sole architect. He now gave all his energies to the work, and had the satisfaction of seeing this chef-d'œuvre terminated before his death.

While in size this noble cupola yields very little to that of St. Peter's (and being on an octangular plan its diameter as measured from angle to angle is somewhat more), it is infinitely more commanding, being so very much larger in comparison with the altitude and other dimensions of the mass on which it is placed. It further suggests the idea of greater amplitude of space within, and has also less the appearance of being a separate and independent structure standing upon the lower one; besides which, its simplicity and expanse, if they do not perfectly accord with, are rendered not the less striking by, the fanciful and somewhat minute style of the older part of the fabric. Although this single structure was to himself personally his most memorable

work, it was by no means the sole one of any magnitude which he executed. Among his other productions may be mentioned the church of San Lorenzo at Florence, and the celebrated Pitti Palace in that city. The latter of these, which was afterwards continued and completed by Ammannetti, is more remarkable for its severe simplicity and massiveness than for any of the graces of architecture, or for what belongs to design. Its idea, in fact, appears to have been derived from an ancient aqueduct; yet if it has therefore a certain monotony, owing to the unvaried repetition of the same features, namely tiers of arches, it also possesses the character of a vast and solid construction, which produces an impression not so much by form as by bulk and positive quantity.

Brunelleschi was also employed on several works at Mantua and in its vicinity. In his private character he is said to have been a man of a noble and generous spirit; and that as an architect he was enthusiastic in devotion to his art, there can be little doubt. He died in the year 1444 (that of Bramante's birth), and was buried with much ceremony in Santa Maria del Fiore, his remains resting within that edifice which he had consummated by his skill, and which will perpetuate his name.

BRUNNI, LEONARDO, was born at Arezzo, of humble parents, in 1369. He studied Latin and Greek, at Florence, under the learned Coluccio Salutati, and afterwards went to Rome, where he obtained the post of secretary in the papal chancery, (BRACCIOLINI,) under Innocent VII. In a tumult, which took place at Rome against the papal government, he was assailed by the mob, and escaped with difficulty to Viterbo, where the pope took shelter. Bruni continued in his office, under Innocent's successors, and he attended John XXII., in 1414, to the Council of Constance. After the deposition of that pope, Bruni returned to Florence, where he chiefly resided for the remainder of his life. In 1427 he was appointed chancellor to the republic, an office which he retained till his death. He was also sent by the state on several missions. When the Emperor John Palæologus and the Greek patriarch came to attend the council of Florence, Bruni harangued them in Greek, in the name of the republic. He died in 1444, and was buried, with great honours, in the church of Sta. Croce, where he is seen on his monument reclining on a bier with the volume of his 'History of Florence' on his breast, and a crown of laurel round his head, for in this manner he was buried by order of the community. Giannozzo Mannetti recited a long and learned oration at his funeral, but his friend Filelfo, not being satisfied with it, composed another still more eloquent panegyric. Poggio also wrote an eulogium of Bruni. The temper of Bruni was milder than that of his friend Poggio, and he did not indulge so much as the latter in violent disputes and virulent invectives. Once, however, he quarrelled with his friend Niccolo Nicoli, and wrote a bitter libel against him, which has never been printed: the MS. is preserved in the Laurentian library at Florence. Bruni was commonly styled L. Aretino, from the place of his birth, which circumstance has led some travellers, and Mme. de Staël among the rest, to mistake his monument at Sta. Croce for that of the obscene writer Pietro Aretino, who died and was buried at Venice. (Valéry, *Voyages en Italie*.) Bruni wrote a great number of works, many of which are now forgotten, and have never been printed. Méhus gives the titles of 63 of them in his biography of Bruni, prefixed to the edition of his 'Epistolarum,' 2 vols. 8vo., Florence, 1741. Among his Latin works are a 'History of the Goths,' compiled in great measure from 'Procopius;' a commentary on the Peloponnesian war, a book on the first Punic war, to fill up the void of the lost books of Livy, a history of his own times from the schism of Urban VI. and Clement, in 1387, till the victory of Anghiari by the Florentines, in 1440; and the 'Historia Florentina.' This last, Bruni's principal work, begins from the foundation of Florence, and is carried down to the year 1404. It was printed at Strasburg, fol. 1610, and was also translated into Italian by Donato Acciajuoli, Venice, 1476, and Florence, 1492. Machiavelli, in the preface to his own 'Storia Fiorentina,' says of his two predecessors, Bruni and Poggio, that they related diligently the wars and other external transactions of the republic, but were either silent or very brief in their accounts of the civil factions and other internal transactions, either through prudential reserve or because they looked upon those domestic contentions as beneath the dignity of history. Bruni trans-

lated into Latin 'Plato's Epistles,' and dedicated them to Cosmo de' Medici; his dedicatory address is given in Roscoe's 'Lorenzo,' vol. i. Appendix 8. He also translated the Politics, Ethics, and Economics of Aristotle, several speeches of Demosthenes and Æschines; and made numerous other translations from the Greek. He wrote, in Italian, 1. 'Vita di Dante e del Petrarca,' Florence, 1672, which is not among the best biographies of these two illustrious men. 2. 'Vita di Cicerone,' which he first composed in Latin and afterwards turned it into Italian, printed, for the first time, by Bodoni, Parma, 1804. 3. 'Novella di Messer Leonardo d'Arezzo,' inserted among the 'Novelle di vari Autori,' and published again separately at Verona, 1807. It is founded on the story of Stratonice, wife of Seleucus, and her step-son Antiochus. (Mazzuchelli, *Scrittori d'Italia*.)

BRUNIACEÆ, a small natural order of exogens, belonging to the albuminous group, and, notwithstanding the different habit, nearly allied to the currant tribe (*Geraniaceæ*). The species are small heath-like shrubs with minute, closely imbricated leaves, and small flowers collected in little compact heads. They have a superior 3-lobed calyx, 5 petals, 5 perigynous stamens, and a dioecious or indeterminate 2 or 1-celled fruit, crowned by the persistent calyx. The seeds are solitary or in pairs, and have a short aril. All the species, except one from Madagascar, are natives of the Cape of Good Hope. They are of no known use.

Bruniaceæ differ from Grossulariaceæ in their dry fruit and central placentas; from Escalloniaceæ, in the very small number of their seeds; from Rhamnaceæ, in their minute embryo, and from both Umbelliferae and Araliaceæ, in their flowers not being in umbels.

BRUNINGS, CHRISTIAN, was born in 1736 at Neckerau in the palatinate. He early applied himself to the study of hydraulics, and ultimately became one of the first hydraulic engineers of his time. The States-general of Holland having appointed him in 1769 inspector-general of the rivers and canals, he effected many useful works, drained several tracts of land, repaired the dykes of the Haarlem Meer, deepened the bed of the Oberwasser, and altered the course of the Panerden canal, which communicates between the Waal and the Rhine. In the course of these operations he invented an instrument to measure the rapidity of streams, and to determine the same at any depth. He explained the principles and the use of this invention, which goes by the name of the 'Brunings'sche Strommesser,' in a treatise which has been translated from the Dutch into German under the title of 'Abhandlung über die Geschwindigkeit des fließenden wassers, und wie den mitteln dieselbe auf allen tiefen zu bestimmen,' &c. Frankfurt, 1798, with plates, and an introduction by Wabeking, councillor of Hesse Darmstadt, in which the great services rendered by Brunings to Holland are enlarged upon. Brunings died in 1805. The government of the then Batavian republic proposed to erect a monument to his memory in the cathedral of Haarlem, but the subsequent political changes prevented its being carried into effect. Several scientific essays of Brunings's are inserted in the 'Memoirs of the Haarlem Society of the Sciences.' There is another Christian Brunings, a native also of the palatinate and a professor, who wrote a book on the 'Anacrotiques of Greece,' Frankfurt, 1734, which was published again some years after with an appendix on the 'Recessus Triumphæ.'

BRÜNN, a circle of the Austrian Margraviate of Moravia, bounded on the N.W. by Bohemia and on the S. by Hungary and the Archduchy of Austria; within an area about 1762 sq. m. It contains 13 towns (among which are Brünn, Mikulow or Nickolsburg, Boskowitz, Wachsenau, Austerlitz), 56 m. t. and 649 villa, and a pop. of 233,000 souls, which shows an increase of about 21% since the year 1817. The N. districts are occupied by mountains, with some fertile valleys among them to the S. parts, which are more level and have a richer soil, produce large quantities of wine. The circle is watered by the Zwittava, Schwartzava, and Igla, which fall into the Thaya, a tributary of the March, which receives the Thaya in the Landshut at the S. extremity of Brünn. The inhabitants subsist principally by agriculture and wine-making or tanning, weaving linens and woollens, and making leather, paper, &c. The country produces grain, hops, flax, timber, iron, and alum, and other minerals. The breeding of cattle is of limited extent.

Budern (in the native tongue Brno, a term which car-

responds to our English word 'ford,') has been the capital of Moravia, since 1641, when the seat of government was transferred from Olmütz. It lies in the centre of the circle near the confluence of the Zwittawa and Schwartzawa, which run on each side of it; is situated in the middle of a fine open country, and is partly built on an eminence which commands some beautiful and extensive prospects. The town is surrounded by a deep ditch and high walls, and was formerly protected by a citadel which takes its name from the Spielberg, a hill 816 ft. in height, on the summit of which it is constructed; but since the partial demolition of its defences by the French, in 1809, it has been converted into a state-prison and a house of correction. East of the Spielberg is another eminence, the Franzensberg, about 600 ft. in height, along one side of which the residences of the chapter, and the new parts of Brünn have been erected. Independently of the Spielberg, the town is about 1½ m. in circuit, and has four gates facing N., E., S., and W.; the streets are irregular, narrow, and crooked, but well paved, provided with flagstones for foot passengers, and well lighted at night. There are seven squares ornamented with fountains, the largest of which is the vegetable market; the houses, which are in general of regular construction, amount to about 2300, including the ten suburbs. Within the last twenty years the pop. has increased from 23,764 to about 35,000, besides about 3000 military and 2700 individuals not natives of the town or environs. The finest square is the Large Square, which is of spacious dimensions, and embellished with a handsome column dedicated to the Virgin Mary, a corps-de-garde, and handsome dwelling-houses. Brünn is divided into six parishes, and has as many parochial churches besides those in the suburbs. The cathedral stands on the Petersberg, a rocky height in the W. part of the town, and has no particular claim to architectural beauty. St. Jacob's is a fine specimen of the Gothic style of the beginning of the fourteenth century: the roof, which is very lofty, is supported by two rows of columns, and is covered entirely with copper: the steeple, said to be the highest in Moravia, is 276 ft. in elevation; and the interior contains a handsome marble monument to Field-marshal Count de Sueses, who defended Brünn against the Swedes in 1644. The church of the Minorites, with the adjoining sacred staircase, and house of Loretto, is of peculiarly handsome construction; and the church of the Capuchins, celebrated for Sandrart's fine altar-piece, the raising of the Cross, as well as the Gothic church of the Augustine monastery, in the Altbrünn suburb, with Kranach's Madonna, and a large library, are well deserving of notice. Among other public buildings are the Dicasterial House, which contains the governor's residence and the government offices; the palace for the military department; the town-hall with embellishments in the Gothic style; the theatre, and its assembly-room; the college of the Jesuits, at present used for soldiers' quarters, the northern front of which occupies one side of a whole street; the episcopal palace built on the Petersberg, one of the most commanding sites in the town; the handsome mansions of the Dietrichsteins, Kaunitzes, Liechtensteins, Zierotins, and others of the nobility; the military hospital, formerly a church belonging to the Prämonstratensian order; and the Maria-school, an endowment for females of noble birth. There are several delightful promenades in and near Brünn, the most attractive of which are the gardens on the Franzensberg, which are ornamented with an obelisk, 60 ft. high, erected in 1818 in honour of the late emperor Francis I.; and the Augusten, a park laid out partly in the English and partly in the French style. Brünn is the seat of government for the Margraviate; and also of the high courts of judicature. It is the centre of episcopal jurisdiction, and the Protestant consistory is established here. The National Society for the encouragement of agriculture, natural history, &c., has the Franzens-Museum, with its valuable collection under its care. The academical institutions consist of an Episcopal seminary, a gymnasium, an academy for educating teachers, a school for the instruction of tradesmen and mechanics, a Protestant school, an academy for young females attached to the Ursuline convent, and several schools for the lower classes. The principal benevolent institutions of the town are a general infirmary, founded by Joseph II. in 1785; a lying-in hospital and lunatic asylum; an orphan asylum; a society for the relief of the poor at their own houses; a refuge for the widows and orphans of teachers in Moravia and Silesia;

asylums for decayed livery-servants, for the blind, and the deaf and dumb; and a national loan-bank. Independently of the house of correction on the Spielberg, there is another here for the province in general.

Brünn is the seat of some considerable manufactures, particularly of fine woollen cloths and kerseymeres for the Hungarian and Vienna markets: of these there are seventeen establishments at work. The other fabrics chiefly consist of silks, ribbons, yarns, machinery for the woollen manufacture, leather, cotton prints, woollen caps, and vinegar. No town in Moravia has so extensive a domestic trade, in which it is much favoured by its central position with respect to Prague, Breslau, Pesth, and Vienna. It has four wholesale markets in the year, which are each of 14 days' duration, and to which the manufacturers of Bohemia, Moravia, Silesia, Galicia, and other parts of Austria, resort in considerable numbers. The trade of Brünn in colonial and other foreign productions is also extensive.

The Spielberg is in 49° 11½' N. lat., and 16° 36' E. long.; and the town is about 70 m. due N. of Vienna.

BRUNO, GIORDANO, was born at Nola in the kingdom of Naples, about the middle of the sixteenth century. He entered the order of the Dominicans, but being of an inquisitive turn of mind, he began to express doubts on some of the dogmas of the Roman church, the consequence of which was that he was obliged to run away from his convent. Upon this he went to Geneva, where he spent two years, but soon incurring the dislike of the Calvinists, on account of his general scepticism on religious matters, he removed to Paris, where he published, in 1589, a satirical comedy, 'Il Candelajo,' in ridicule of several classes and professions in society; this comedy was afterwards imitated in the French anonymous play, 'Bonifacio et le Pédant,' Paris, 1633. Bruno gave lectures on philosophy, in which he openly attacked the doctrines of the Aristotelians, which had already been combated in France by Ramus and Postel. Having made himself many enemies among the professors of the Paris university, as well as among the clergy, he went to England in 1583, where he enjoyed the protection of Castelnau the French ambassador, and gained the friendship of Sir Philip Sidney, to whom he dedicated his 'Spaccio della bestia trionfante,' an allegorical work against the court of Rome, with the 'Cena delle Ceneri,' or evening conversations on Ash-Wednesday, a dialogue between four interlocutors. He also wrote 'Della causa, principio et uno,' and 'Dell' infinito universo e mondi,' in which he developed his ideas both on natural philosophy and metaphysics. His system is a kind of pantheism; he asserted that the universe is infinite, and that each of the worlds contained in it is animated by the universal soul, &c. Spinoza borrowed some of his theories from Bruno. Buhle, in the history of modern philosophy, gives an exposition of Bruno's system. See also Jacobi's preface to the letters on the doctrine of Spinoza. In his next work, 'Cabala del caval Pega-oo con l'aggiunta dell' asino Cillenico,' he contends that ignorance is the mother of happiness, and that 'he who promotes science increases the sources of grief.' Bruno's language is symbolic and obscure; he talks much about the constellations, and his style is harsh and inelegant.

After remaining about two years in England, during which he visited Oxford, and held disputations with some of the doctors of that university, Bruno returned to Paris in 1585. In the following year he went to the university of Marburg in Germany, where he was matriculated, without however obtaining leave to give lectures. Having quarrelled with the rector on this account, he proceeded to Wittenberg, where he was received professor, and published in 1587 a treatise, 'De lampade combinatoria Lulliana.' At Wittenberg Bruno was invited to become a member of the Lutheran communion, which he seems to have declined; upon which he proceeded to Brunswick, where he was well received by the Duke Julius, who placed him at Helmstadt as teacher. On the duke's death in 1589, Bruno repaired to Frankfurt, where he wrote several Latin treatises explanatory of his metaphysics. At Frankfurt on a sudden he resolved, from what motive is unknown, to return to Italy, a step which was greatly censured by his friends. He went first to Padua in 1592, where he remained two years, and then to Venice, where he was arrested by the ecclesiastical inquisition, and transferred to Rome in 1598. He remained two years in the prisons of the holy office, all the while amusing the inquisitors with hopes of his recantation. At last, on the 9th February, 1600, sentence was passed upon him as a

confirmed heretic, and he was given up to the secular power. After being detained eight days in the city prisons, he was taken to the Campo di Fiore, and burnt alive on the 17th February. Scioppius the Latinist, who seems to have been present at the execution, relates, in a letter to Rittershusius, that as the monks held up the crucifix to him, Bruno turned his face away, upon which Scioppius exclaims, 'Such is the manner in which we at Rome deal with impious men, and monsters of such a nature!'

Bruno's works, some of which had become very rare, while others remained inedited, have been collected and published together by Dr. Wagner, with a life of the author: 'Opere di Giordano Bruno Nolano ora per la prima volta raccolte e pubblicate,' 2 vols. 8vo. Leipzig, 1830.

BRUNO, SAINT, born at Cologne in 1051, studied at Paris, and afterwards became a canon of Rheims, and director of the school or seminary of that diocese; but being disgusted with the vexations and misconduct of the Archbishop Manasses, he took the resolution of leaving the world and retiring to a solitude. He repaired first to Saisse Fontaine, in the diocese of Langres, and afterwards to a mountain near Grenoble, in 1084, where being joined by several other ascetics, he built an oratory and seven cells, separate from each other, in imitation of the early hermits of Palestine and Egypt. Bruno and his monks cultivated the ground in the neighbourhood of their cells, and lived upon the produce, and upon what the charity of pious persons supplied them with. This was the origin of the order of the Carthusians, and of the splendid convent afterwards built on the spot, which is called La Grande Chartreuse. Bruno adopted the rules of St. Benedict, but afterwards Gui, the 5th general of the order, wrote distinct regulations for it. Pope Urban II., who had studied under Bruno at Rheims, insisted upon his going to Rome, where he stood in need of his advice. Bruno after a time becoming weary of the papal court, retired to a solitude in Calabria, where he founded another convent of his order, in which he died in 1101. He was canonized in 1514. Several commentaries and treatises have been attributed to him, which were written however by another St. Bruno Signy of Asti, a contemporary of the former, and abbot of the Benedictines of Monte Casino. Of St. Bruno the Carthusian there are two letters written from Calabria, one of which is addressed to his brethren of the Grande Chartreuse, near Grenoble. (Bollandi, *Acta Sanctorum*; and *Dict. Univ. Historique*.)

BRUNSWICK (in Germany, BRAUNSCHWEIG). Two distinct sovereignties have sprung from the house of Brunswick. The possessions of the elder or ducal line are confined to the grand duchy of Brunswick-Wolfenbüttel; the younger or electoral line, by whom the kingly title was assumed in 1814, possesses the kingdom of Hanover, and is also designated the Brunswick-Lüneburg, or Hanoverian line. The latter line has given kings to Great Britain from the commencement of the 18th century.

The following article relates wholly to the duchy of Brunswick. The lands of which this duchy is composed principally consist of three large unconnected districts, lying on the banks of the Aller, Ocker, Leine, and Weser, in the N.W. part of Germany. The most southern of these districts lies wholly upon or next the Lower Harz; the eastern district extends from the northern foot of the Harz to the plains of Lüneburg, and is traversed by several ranges of hills, among which are the Elm, 1100 ft. high, but declines in the north to an uninterrupted plain; and the third or western district is all highland, and embraces portions of the Solling, Iht, and Hüls ranges. These territories are bounded on the N. and S. by the kingdom of Hanover, on the E. and S.E. by Prussian Saxony and Anhalt, and on the W. are separated by the Weser from the Prussian dominions. Brunswick possesses also three isolated demesnes, the bailiwick of Ottenstein, on the right bank of the Weser, which is quite detached from the rest, and has the principality of Waldeck for its neighbour; the bailiwick of Thedinghausen, which is surrounded by the Hanoverian earldom of Hoya; and the bailiwick of Calvörde, which is situated within the borders of Prussian Saxony. These several possessions are situated between 9° 10' and 11° 22' E. long., and 51° 35' and 52° 32' N. lat., and occupy about 1525 sq. m. They were formerly constituent parts of the German empire, consisting of the principalities of Wolfenbüttel and Blankenburg, the ecclesiastical bailiwick of Ottenstein, the bailiwick of Thedinghausen, and other

isolated parcels of land, together with four-fifths of the sovereignty of the Lower Harz.

The duchy is at present divided into six circles:—

	Sq. M.	Bailiw.	Pop.	Chief Town.	Pop.
Brunswick	231	3	58,400	Brunswick	35,500
Wolfenbüttel	246	5	49,900	Wolfenbüttel	8,300
Helmstedt	322	5	49,000	Helmstedt	6,300
Gandersheim	245	4	38,100	Gandersheim	2,300
Holzminden	287	5	36,400	Holzminden	3,200
Blankenburg	194	3	18,200	Blankenburg	3,190

1,525 25 250,000

The whole duchy contains 12 towns, 15 vill. with markets, 417 vill. and haml., and about 28,000 houses.

The northern districts of Brunswick, particularly the principality of Wolfenbüttel, have an undulating surface, intersected by several ranges of hills, such as the Elm, Ocker, Fallstein, and Asse; and there are also some forests: at their N. extremity heaths and moors occur, which are part of the great sandy levels which characterize the N. of Germany. The southern districts, including the Blankenburg territory, which lie within the limits of the Harz, are a succession of highlands and mountains, in part well wooded, and studded with wide and highly cultivated valleys. The Harz is the principal mountain range in the Brunswick dominions, whose share of it amounts to 164,000 acres, independently of its offsets. The loftiest summits within the duchy are the Wormberg, which is 2880, the Radauerberg 2317, the Förstertränke 2298, and the Rammelsberg 1914 ft. high. Throughout the duchy the surface gradually declines from this range towards the N., the larger portion sloping to the banks of the Weser, and the remainder eastwards in the direction of the Elbe.

The soil in the N. is highly productive, with the exception of the extreme borders, which belong to the great Lüneburg plain, though even here it does not degenerate into mere drift-sand or barren heaths. In the S. the country is mountainous and of a stony character, which is particularly observable of the Blankenburg districts; but in Wolfenbüttel and Scheppenstädt, and next the Weser and Leine, it admits of profitable cultivation. Thedinghausen consists partly of marsh and partly of high land. The most unproductive tract in Brunswick occurs in the bailiwick of Ottenstein, in the Holzminden circle.

The whole of that part of the Harz which is comprised within the Brunswick territory belongs to the region of the Lower Harz; the highest point is on the N.E. edge of the most southerly districts, whence it spreads not only over the entire principality of Blankenburg, but sends out its branches, though not always in an unbroken line, over most parts of the duchy. Of these remoter branches there are the sandstone range of the 'Solling' near the Weser, which occupies 18,000 acres; the 'Hufe' next the banks of the Leine; the 'Elm,' consisting of wooded slopes, 31,000 acres in extent, lying between Wolfenbüttel and Schöningen; and a portion of the forest-covered heights of the 'Drömling,' occupying 16,776 acres in the district of Schöningen. These mountains contain the bulk of the woods and forests of Brunswick; the higher regions of the Harz are exclusively the regions of the fir and pine; the less elevated have these species of wood intermixed with underwood; and the lowest acclivities abound in oaks, beeches, birches, alders, &c.

The most considerable riv. in the duchy, the Weser, flows for about 20 m. through its western territory, between Mennebrachsen and Dospe, and again through Thedinghausen. Although eleven streams run into it on the Brunswick side, the town of Holzminden is the only place that derives any advantage from it in the way of navigation. Among its tributaries, the Aller traverses a small portion of the northern district of Vorsfelde only, but in its course receives the Ocker, the principal riv. of the northern half of Brunswick. The Ocker rises between Altenau and Andreasberge, on the Harz, and flows across the principality of Wolfenbüttel in its course northwards, until it leaves the duchy at Neunbrück: during its course its waters are increased by those of the Grose, Radau, Ilse, Eoker, Altenau, &c. The Ocker is very useful to the duchy as a means of transporting timber. Other tributaries of the Aller are the Leine, which enters the N. of Brunswick from the vale of Rimbeck in Hanover, divides the Harz from the Weser districts, and directs its muddy, yellowish stream through the first of those districts back into Hanover; the Fuse traverses the western extremity of Wolfenbüttel; and the Innerste, which

rises in the Harz, passes into the Hildesheim territory. The chief streams which discharge their waters into the Elbe or its tributaries are the Ohre and Bode. The Bode is the principal riv. of Blankenburg.

Brunswick contains a great number (according to Venturini 600) of natural pieces of water. The Wipperteich, near Vorsfelde, is still the largest of them, although a considerable portion of it has been reclaimed. There are mineral springs of some note at Helmstedt and near Seesen on the Harz, and sulphuretted waters near Bisperode and Bessingen. The great morass which formerly extended from the Ocker to the Bode has been drained by the navigable can. which now unites those riva., and has proved the means of recovering several hundred acres of land, which are at present converted into luxuriant meadows and pastures.

The valleys between the mountain-ranges of the S. and W. parts of Brunswick are by no means so favourable to the growth of grain as the rich lands in the vicinity of the Weser and Leine. The eastern highlands also, being too cold and stony for agricultural purposes, are used for grazing and supplying timber; but the N. part of Brunswick, where the sand usually acquires consistency from the presence of loam or mould, yields good crops of most kinds of grain. The country is seldom parched by excessive heat, and winter is usually limited to three months' duration in the northern districts; and even in the southern, the atmosphere is cold and exposed to storms only among the mountain-regions of the Harz. In the northern, harvest begins in the third week of July and ends in the middle of November; and in the southern it is not above fourteen days later.

It has been estimated that thirty-three out of thirty-five parts of the entire surface of Brunswick have been made productive; and that of this surface about 336,930 acres are arable, 19,800 cultivated in fruits and vegetables, and 48,590 used as meadows; that the woods and forests occupy 332,660, the meadows and commons 235,460, and the ponds and pools 2560. The yearly produce of corn, viz., wheat, rye, barley and oats, is calculated at from 3,000,000 to 3,500,000 scheffel; and of this produce the winter wheats afford a surplus for exportation. The quantity of beans and peas grown is about 170,000 scheffel; of potatoes the quantity is considerable; of tobacco, between 6000 and 7000 cwts.; of hops, equal to the best in Germany, from 8000 to 10,000 cwts.; of rape-seed, sufficient to yield 600 tuns of oil; and of flax, about 4200 tons. Much chicory is raised as a substitute for coffee in the neighbourhood of the capital, and the whole produce amounts to between 16,000 and 20,000 cwts. per annum.

Horses are but partially reared, and most of them are of an indifferent stock; and though some good has arisen from the ducal stud kept at Harzburg, the best continue to be imported from Mecklenburg, Lüneburg, and Holstein. In 1812 the stock was about 50,300, and it is now estimated at about 53,600. With respect to horned cattle, the breed on the richer soils is, from want of care, far inferior to that in the upland districts. The farmer of Wolfenbüttel, for instance, will obtain but four pounds of butter from his cow where the farmer of the Harz will obtain seven. In many parts the breed has been improved by intermixture with Friesland and Swiss cattle; and the stocks have increased during the last twelve years from 86,400 to about 92,100. Great attention has been paid of late years to sheep; the number, which was 238,965 in 1812, is said at present to be little short of 300,000, while the yearly produce of wool now exceeds 5000 cwts. In 1812 the stock of swine was not more than 46,408, and they are not now estimated at more than 48,000. Of goats there is but a scanty supply, about 8000; and even of poultry the quantity fed is inadequate to the wants of the country. The number of bee-hives is about 10,000, and they are kept almost exclusively in the sandy districts where heaths occur. Game is becoming scarcer every day. Fresh-water fish, such as carp, pikes, and trout, are plentiful.

Wood, which is one of the staple products of Brunswick, has been so seriously injured by neglect and waste, that all the woods and forests have been placed, since the year 1827, under the control of a public board. Their most extensive sites are the districts of the Harz, Blankenburg, and the Weser, where the felling and preparing of timber, and the working it into utensils and for other domestic purposes, employ a vast number of hands. The most common kinds of wood are beech, fir, pine, and oak. Of oaks there are 716,900 in the district of the Weser alone.

The mines of Brunswick are of two classes; one class comprising such as are worked in conjunction with the Hanoverian government, and the other independently of it. The annual produce of the first class, which includes the mines on the Rammelsberge, in the Upper Harz, has ever since the year 1788 been divided into seven shares, of which Hanover takes four and Brunswick three; and the shares accruing to the latter yield, one year with another, according to Villefosse, 2 marks of gold and 1530 of silver. 50 tons of copper, 52 of lead, and 70 of litharge, 115 of zinc, 985 cwts. of vitriol, 954 cwts. of sulphur, and 80 cwts. of potashes; to which must be added 88 lasts (about 164 tons) of salt from the works at Julius-hall. These mines are under the direction of a joint board at Goslar, and consist of one of gold, three of silver, copper, and lead, and three copper and sulphur works. The net yearly revenue, which Brunswick derives from this partnership, is not estimated at more than 2000*l.* sterling. The 'Communion-Harz' also includes a high furnace and two iron-works on the Iberge, together with 45,000 acres of forest. The Independent mines lie on the Lower Harz, in the principality of Blankenburg, near Seesen, and the district of the Weser; their principal produce is iron. They give employment to 11 large works, which annually yield on an average about 14,000 tons of ore, produces 3120 tons of raw iron, 865 of cast iron, 1600 of rod iron, 490 of flattened iron, &c.; 500 of raw and 1250 of cast steel, 45 and upwards of tin plates, and 420 cwts. of iron wire.

Brunswick produces marble (near Blankenburg), alabaster, limestone and gypsum, potter's clay, asbestos, serpentine-stone, agate, jasper, chalcedony, garnets, porphyry, sandstone, freestone, coal (near Helmstedt), and in other places, where there are beds more than adequate to supply the whole duchy with fuel, and alum. There are four salt-works; namely, at Salzdahlum (produce 1500 tons yearly), Schöningen (1300), Salzliebenhall (800), and Julius-hall (250); the last-mentioned forms part of the Communion-Harz. Cobalt and ochre are obtained from the Rammelsberge.

The first census of the pop. of Brunswick, which was made in the year 1760, stated it to amount to 158,980 souls; in 1788, it had increased to 184,709; in 1793, to 191,713; and in 1799, to 209,527. But we are not enabled to speak of the present pop. of Brunswick from official returns, as none have been made public since 1812 and 1830, when the number of inh. was 209,527 (101,598 males and 107,929 females) in the first-mentioned, and 245,783 in the last-mentioned year. Of families there were 41,609 in 1830. From these data, the present pop. may be safely estimated at 250,000 souls, of whom about 150,000 belong to the 748 sq. m. forming the northern, and 100,000 to the 777 sq. m. forming the southern possessions of Brunswick. Out of the 28,000 houses, about 7300 are in towns. Independently of about 1400 Jews, the Brunswickers are all of German extraction. The peasantry use the Low German, and the townspeople and persons of education the High German dialect. In 1830, a classification according to religious persuasions (*Allgemeine Duldung*) was compiled, from which it appeared that the number of Lutherans was 241,749, who were subject to the consistory at Wolfenbüttel, 6 general and 29 local superintendencies, and divided among 238 pars. and 262 auxiliary flocks, in which were 398 churches and chapels. The Reformed Lutheran Church had at that time 1056 followers and one place of worship; the Roman Catholic faith, 2386 followers and three churches (at Brunswick, Wolfenbüttel, and Helmstedt); and the Jews, five synagogues. There were some families of Herrnhuthers then resident in the duchy. The value of all ecclesiastical property was estimated, in the year 1812, at about 47,060*l.* (332,220 dollars), and the incomes of benefices at 17,870*l.* (130,000 dollars). Of these benefices, the duke of Brunswick then held the patronage of 116, landowners of 44, magistrates of 10, prelates of 40, parishes of 10, and foreign confraternities of 19. The nunneries and ecclesiastical endowments for the reception of unmarried females at Sterterburg, Wolfenbüttel, Brunswick, Helmstedt, and Goslar, which had been suppressed by the Westphalian government in 1812, were reinstated in their properties in 1814, and reopened in 1816.

The government has at all times paid great attention to the intellectual improvement of the people, nor has Brunswick had reason to regret the closing of her national university at Helmstedt and her seminary for candidates in divinity at Riddagshausen, both of which were suppressed

by the Westphalian government in 1812. In return for the advantages which she now derives from the neighbouring university of Göttingen, and the exemption of 40 of her youth from payment of fees at that school, she contributes a small portion of the professors' stipends. At the head of her own establishments for the purposes of education are the Lyceum, formerly the Collegium Carolinum, in Brunswick, conducted by 19 professors, and frequented by pupils from the higher classes of society. There are also the anatomical and surgical institute, at the head of which are five professors and a demonstrator; the agricultural institute; an upper gymnasium, pro-gymnasium, and a real-gymnasium (for youths designed for commercial and other ordinary pursuits), the whole three constituting what is called the 'Real-Institut,' and conducted by a director and 35 teachers. All these establishments, as well as the cadet academy for the gratuitous education of 12 pupils for military service, are in Brunswick. There are gymnasia also in Wolfenbüttel, Helmstedt, Blankenburg, and Holzminden. For the poorer classes there are 3 schools of industry, 32 civic schools, and 435 country or parochial schools in the duchy. The Jews have likewise 2 schools for youth of their persuasion. There is a museum, with collections in natural history and numismatics, &c.; a picture-gallery in Brunswick; and a public library at Wolfenbüttel, containing upwards of 200,000 volumes and 10,000 MSS., pamphlets, &c.; besides libraries and cabinets in the capital and in other towns.

The constitution of Brunswick is a limited monarchy, the form of which is determined by the national compact, called the 'Landschafts-Ordnung' of the 12th of October, 1832. The sovereignty passes to the female, upon the failure of the male line, and the heir apparent comes of legal age on attaining his eighteenth year. The legislature is composed of the duke, an upper chamber consisting of 6 prelates and the 78 holders of equestrian estates, and a lower chamber composed of 6 prelates, 19 deputies from towns (6 from Brunswick and 1 from every other town), and as many representatives of the land-holders, who do not possess equestrian rights. No minister of state can be a representative. During the prorogation of the chambers, a permanent committee of representatives acts as a legislative organ. No law can be enacted without the consent of the chambers; they have the right of proposing new laws to the duke, of exposing defects or abuses in the existing institutions of the country, and of impeaching the ministers, and even the permanent committee itself, for violations of duty. In certain cases, particularly of imminent danger to the state, they may meet without being regularly called together. The legislature must be assembled once at least every three years in the month of November; on extraordinary emergencies, a special session may be held upon the requisition of the permanent committee. The taxes are voted for periods of three years; and every point connected with the finances, and indeed with the administration of national affairs, is more or less under the cognizance and control of the legislature. All Christian persuasions, if tolerated by the law, enjoy equal protection and an equality of civil rights; and they are all placed under the general superintendence of the government. The property of the church, schools, and charitable endowments cannot be diverted from its original destination, nor can it be incorporated with the property of the state.

There are three ministers of state appointed by the duke; and there are four hereditary grand dignitaries—an earl marshal, a master of the kitchen, a cupbearer, and a grand chamberlain. There are provincial boards in each circle for its local government and police.

The revenue is derived, in the first place, from the ducal demesnes, monopolies, &c., which yield a net income of about 54,725*l.* (398,000 dollars), out of which, by the settlement made between the duke and the chambers in October, 1832, 32,590*l.* (237,000 dollars) are applicable to the civil list. The next source of revenue is the direct taxes, which produce about 173,940*l.* (1,265,000 dollars); and the last are the indirect taxes, which yield about 152,350*l.* (1,108,000 dollars). The net income of Brunswick from these three sources averages, therefore, about 348,425*l.* (2,534,000 dollars) in each triennial period, after deducting the civil list expenditure; but to this there is yet to be added the net produce of highway rates, the post-office, lottery, &c., which amount to 71,750*l.* (522,000 dollars); and with this addition, the net income for three years will be about 420,175*l.* (3,056,000

dollars), or rather more than 140,000*l.* per annum. In fact, the estimate, as sanctioned by the chambers, for the expenditure of the duchy in the triennial period, 1834 to 1836, amounted to 3,056,082 dollars; of which sum about 118,200*l.* (860,978 dollars) are applicable to defraying the expenses of the military, and about 63,870*l.* (464,535 dollars) to the redemption of the national debt, which amounts to about 495,000*l.* (3,600,000 dollars). The disbursements on account of the 'church and education' are paid out of the income of properties belonging to religious communities and scholastic endowments, which produces a net yearly sum of about 46,830*l.* (340,600 dollars). Estimating the pop. at 250,000, it would appear from these data, that each individual contributes on the average a sum of about 1*l.* 17*s.* 4*d.* towards the expenses of the state every three years, or about 12*s.* 6*d.* per annum.

The military establishment consists of the quota of men which the duchy is bound to furnish to the tenth corps of the army of the German confederation; namely, 1625 infantry, 299 cavalry, and 172 artillery and pioneers; making a total of 2096.

The mineral resources of Brunswick afford extensive employment for the labouring classes; but are also employed in the spinning of yarn and weaving of linen. Yarn is spun all over the duchy, and forms an important branch of industry both in the country and in the towns. The greater part is made into linen, and some is exported. The linen manufacture once employed above 2000 weavers, but it has greatly declined of late years. In the districts nearest the Weser, the people knit considerable quantities of stockings; and in the northern parts the peasantry make for their own use a species of cloth, half woollen and half of linen yarn, which is thence termed 'beiderwand,' or union cloth. Oil is almost wholly a product of the lowlands, and keeps 170 mills at work, from which about 900 tuns are obtained. Paper is manufactured in 16 mills, to the extent of about 5000 bales; and with the view of maintaining a regular supply, the exportation of rags is prohibited. The number of gypsum works is 18, lime-kilns 47, and tile and pottery manufactories 23. Earthenware and tobacco pipes are chiefly made at Helmstedt; there is a large china manufactory at Fürstenberg, and glass and mirrors are made in the parts adjacent to the Weser. The manufacture of woollens is small, and principally carried on at Brunswick; ribbons are made in Brunswick and Wolfenbüttel; soap is mostly manufactured at Holzminden. The breweries, including the celebrated 'Mumme' brewery at Brunswick, have very much declined; and the same remark applies to the once extensive tobacco manufactories in Brunswick, Wolfenbüttel, and Holzminden. The number of water-mills is 284, wind-mills 63, and mills worked by horses 6: besides these, Brunswick possesses 11 saw and other mills.

The duchy having no coast or navigable streams, its trade with foreign parts is naturally cramped; the chief portion of it passes through Brunswick, particularly that which arises from the transit of merchandise between the Hanse towns and the interior of Germany. The chief articles of home manufacture which are exported consist of yarn, linen, grain, oil, chicory, madder, leather, timber, hops, and ironware, the estimated value of which does not at present exceed 150,000*l.* per annum. The importations are principally composed of colonial produce, raw materials, tea, butter, cheese, cattle, &c. (*Venturini's Duchy of Brunswick*; Crome, Hassel, Stein, Malchus, &c.)

BRUNSWICK.—History.—The present inhabitants of this country are by some supposed to be descendants of the Saxones or Cherusci, the former of whom were at an early date settled on the lands which lie N. of the mouths of the Elbe and Weser, and the latter, in the time of their greatest power, spread themselves on all sides round the Harz mountains. Other writers, admitting this descent in part, claim it also in favour of the Bructeri Majora, whose easterly settlements lay close upon the banks of the Weser, as well as of the Angrivarii or Angri, who dwelt on both sides of the same river. At all events it seems to be well ascertained that these tribes inhabited different parts of the present territory of Brunswick, and that the great northern antagonist of the Romans, Arminius, was a Saxon, whose native home was the banks of the Weser. In this territory too lay the field of Idistavium (*Comptes Rendus Annal. II. 16*), on which Arminius with his allies, who had thrown off the yoke of Rome, met with a

signal overthrow from Drusus in the beginning of the first century. Monuments of the independent spirit of these warlike people are found at this day at the foot of the Solling, a range of thickly-wooded hills which skirt the Weser both on the Brunswick and Hanoverian soil.

At a later date the Wends settled in these parts, and traces of their name still exist in Wendezell, Wendeburg, and Wendenhausen, estates within the borders of the duchy.

The house of Brunswick, one of the oldest families in Germany, a branch of which is now seated on the British throne, derive their descent from Albert Azo I., margrave of Este in Italy, who died in 964. His great grandson, Albert Azo II. of Este, who held the sovereignty of Milan, Genoa, and other demesnes in Lombardy, had for his first wife Kunigunda, daughter of Guelph II., who died in 1030, and was of the blood of the Alostors, counts of Swabia. His son by this marriage, Guelph the First (more properly the Fourth), became possessed of the dukedom of Bavaria and founded the junior house of Guelph, to which the house of Brunswick traces its origin. This prince, who inherited the whole of the possessions of the Guelph family from his maternal uncle, died in 1101. Guelph II. (or V.), his eldest son, married in 1089 the celebrated Countess Matilda, but was divorced from her some years afterwards, and died childless in 1119. His inheritance devolved to his brother, Henry the Black, whose union with the daughter and heiress of the last duke of Saxony brought him a considerable accession of territory in Lower Saxony. This prince was succeeded in 1125 by Henry the Proud (or Magnanimous), his son, who, by intermarriage with the only daughter of Lotharius II., heiress of the vast possessions of the Billings, added to the dukedom of Bavaria and Austria, Brunswick, and the duchy of Saxony, by which acquisitions he became the most powerful sovereign in Germany, and extended his dominion from Italy to the shores of the Baltic. He died in 1139, after the ban of the empire had been fulminated against him for laying violent hands on the imperial insignia, and endeavouring to usurp the imperial dignity. He was followed by his son, Henry the Lion, who having seized upon Holstein and Mecklenburg was stripped by the ban of 1179 of Bavaria, Saxony, Austria, and other possessions in the S., and allowed to retain only his domains in Lower Saxony, consisting of Lüneburg, Kalenberg, Göttingen, Grubenhagen, and the duchy of Brunswick-Wolfenbüttel. This was the death blow to the supremacy of the Guelphs. As Henry's eldest son was become, by marriage, count palatine, and his second son, Otho, had died on the imperial throne in 1218, William, a younger son, succeeded on Henry's death to the Brunswick inheritance; and Otho, a son of this prince, became the founder of the present dynasty, by virtue of his solemn investiture with the territory of Brunswick as a fief of the empire in 1236, on which occasion he was recognised as the first duke of Brunswick. His son Albert succeeded him; and John, another son, who died in 1277, founded the elder branch of the Lüneburg house, which became extinct in the person of William of Lüneburg in 1369. In this way Magnus 'of the Chain,' a great grandson of Albert, who died in 1373, united the possessions of each dynasty, and became the joint ancestor of what are termed the 'intermediate lines' of Brunswick and Lüneburg. Of these two lines that of Brunswick, which in 1503 had split into the Kalenberg and Wolfenbüttel branches, became extinct with Duke Frederic Ulrich in 1634. Ernest the Pious, or the Confessor, who died in 1546, inheriting the principalities of Brunswick and Lüneburg as surviving representative of the intermediate line, was the founder of both branches of the existing dynasty; but the inheritance was again divided at his decease, by which partition Henry, his eldest son, established the line of Brunswick-Wolfenbüttel in 1569, and William, his younger son, established the line of Brunswick-Lüneburg. It was a descendant of the last-mentioned prince, Duke Ernest Augustus, who was raised to the dignity of ninth elector of the empire in 1692; and George Lewis, a son of the same Ernest Augustus, succeeded to the crown of Great Britain in 1714, by virtue of his descent on the female side from James I. Augustus, who acquired some celebrity as a writer under the designation of Gustavus Selenus, removed his residence from Hitzacker to Wolfenbüttel, where he founded the great library in that town. At his decease, in 1666, he left behind him three sons, the youngest of whom having had the sovereignty of Bevern

assigned to him, founded the line of that name; his elder brothers became joint rulers of the remaining territories of Brunswick-Wolfenbüttel, and having in 1671 put an end to the extensive privileges enjoyed by the town of Brunswick, compelled the citizens to recognise them as their masters. Upon the death of the elder of the two brothers, Anthony Ulrich, who built the town of Salzdahlen, became sole ruler. On his death in 1714, he left two sons behind him, Augustus William, who fixed his seat of government at Wolfenbüttel, and Lewis Rudolphus, who made Blankenburg his capital, but afterwards removed to Wolfenbüttel, the decease of Augustus having re-united the disjointed principalities in 1731. As Lewis had no male heirs, Ferdinand Albert, of the line of Bevern, succeeded to the dukedom in 1735. Lewis Ernest, the third son of this prince, held the rank of field-marshal in the service of the Dutch states from 1759 to 1766, during which period he was captain-general of the United Provinces, and acting guardian of the hereditary Stadtholder; the jealousy however of the patriotic faction exiled him to Bois-le-Duc, much to the prejudice of the welfare of Holland, and he died there in 1768. His next brother, Ferdinand, who entered the Prussian service, distinguished himself greatly in the Seven years' war, decided the battle of Prague, and in 1757, at the head of the Prussian army in Westphalia, gained the victories of Corfeld and Minden, and drove the French out of Westphalia, Lower Saxony, and Hesse-Cassel. The father of these two princes, Ferdinand Albert, after a reign of a few months, was succeeded in 1735 by his son Charles, who transferred the seat of government to Brunswick in 1754, and there founded the celebrated 'Collegium Carolinum.' He was the steady and active ally of England during the Seven years' war, but at the expense of the peace and prosperity of his states as well as of his exchequer, which was encumbered with a debt of nearly one million sterling in consequence of this alliance. He extinguished, however, one fourth of it before his decease, in 1780, when his son, Charles William Ferdinand, succeeded him. This prince, who had been educated as a soldier, at the head of the Brunswick auxiliaries in the Seven years' war, was mainly instrumental in gaining the victory of Krefeld in 1758, and was acknowledged by Frederick the Great to be one of the first captains of his day. He married Augusta, princess of Wales, in 1764. At the close of the Seven years' war the domestic interests of his exhausted possessions afforded him a new sphere of action, in which, by the extinction of its debts and the wisdom of his general government, he showed himself as well fitted to govern a country as to command an army. Previously to his accession to the ducal crown he had accepted a commission in the Prussian service as general of infantry; in this capacity, in 1787, he took the command of the Prussian forces, marched into Holland, and reinstated the Stadtholder in his dignity. In 1792 he was called upon to lead the Austrian and Prussian armies in the campaign against revolutionary France, and after issuing the violent manifesto of the 15th July in that year, entered Lorraine and Champagne, where, destitute of resources and baffled by the caution of Dumouriez, his fruitless attempt to force the position of Valmy compelled him to conclude an armistice and abandon the French territory. In the campaign of the following year, which he carried on in conjunction with Wurmsser, the Austrian general, on both banks of the Rhine, from Strasburg to beyond Landau and Mayence, he was so ably opposed by Moreau, Hoche, and Pichegru, and so indifferently supported by his Austrian allies, that he determined to resign his command. He accordingly withdrew to Brunswick, and continued to employ himself with the cares of domestic government until Prussia called upon him to lead her troops against Napoleon in the year 1806. The duke weighed down by years, unacquainted with the improved science of modern warfare, and at the head of an inexperienced army; physically inferior to the enemy, closed his distinguished career by the loss of the battles of Jena and Auerstedt in October, and retired, broken-hearted and mortally wounded, to Ottensen near Hamburg, where he died on the 10th of November following. His duchy fell a prey to Napoleon, and was incorporated with the new kingdom of Westphalia. His son, William Frederick, who had distinguished himself in the campaigns of 1792 and 1793, as well as in 1806, and had succeeded to the collateral inheritance of Brunswick-Oels in Prussian Silesia, remained an exile from his native

dominions until the Russian campaign shook Napoleon's power. The retreat of the French armies from the N. of Germany in 1813 enabled the duke to recover possession of his Brunswick sovereignty in December of that year. But little time was afforded him to set it in order, for the renewal of hostilities with France in 1815 calling him into the field, he put himself at the head of his gallant fellow-countrymen, joined the Prussian and other allied forces in Belgium, and bravely fell in the conflict at Ligny on the 16th of June. From that day until his son Charles came of age, George IV. of England, (who had married Caroline of Brunswick, the sister of William Frederick), then prince-regent, administered the affairs of Brunswick as his appointed guardian. Charles, after a transient misrule of about five years, was forced in September, 1830, by an insurrection in the city of Brunswick, to seek safety by a precipitate flight from his capital; and under a resolution of the Diet of the German Confederation on the 2nd December following, he was succeeded by his brother, William prince of Oels, who assumed the government on the 20th April, 1831.

BRUNSWICK, the capital of the Duchy, which lies upon both banks of the Ocker, was known long before the times of Henry the Lion as a mere farm called Brunswick, belonging to the incumbency of St. Magnus. That prince, who was its real founder, divided the town into three quarters. It became one of the Hanse towns in the 13th century, and until the middle of the 15th, was accounted the chief town in Lower Saxony; but its prosperity declined with that of the Hanse towns. It is at present the residence of the Brunswick sovereigns and their seat of government. The fortifications were levelled in 1794, and converted into pleasure grounds and walks. Its area, which includes Richmond, the duke's country seat, Eisenbüttel, and the Münzberg, occupies about eight sq. m.; the town itself is divided into 6 districts, contains about 101 streets, 3400 houses, and 36,000 inh. Among its 10 churches are the cathedral, in which are monuments to Henry the Lion and Matilda his consort, and the vault of the ducal family; and St. Andrew's, the steeple of which is 316 ft. high. The chief public buildings are the duke's palace (a new structure in course of completion), the old palace, now used for barracks, near which is a bronze statue of Henry the Lion, the chapter-house, chancery, house of legislative assembly, mint, arsenal, ducal exchequer, opera-house, town-hall, trades-hall, old Altdorf town-hall, pack-house, Collegium-Carolinum, and general and lying-in hospital. Between two of the gates (the Augustus and Steinhore) a handsome obelisk 60 ft. high, was erected in 1822 to the memory of the two dukes who fell in the campaigns of 1806 and 1815. The establishments for education consist of the college, founded in 1745; a gymnasium, and seminary for teachers; a college of anatomy and surgery; a school for practical acquirements (*Real-schule*); several elementary schools, two orphan asylums with schools attached, and a deaf and dumb asylum. There is a good museum of works of art, &c. in the second story of the arsenal, besides a number of private collections. Brunswick has 7 gates and 12 squares or open spaces; the park and gardens of the palace are thrown open to the public, and a fine avenue of linden trees leads from the town to the duke's seat, Richmond, the grounds of which are laid out in imitation of Richmond Park near London. The manufactures are of importance and in repute; the principal are woollens, linen, lacered and hard ware, tobacco, chicory, glauber-salts, mineral colours, china, *papier maché*, leather, coloured papers, brandy, and liqueurs. But the chief source of wealth is its trade, two great fairs, a wool-market, and six cattle-markets in the year. Brunswick is full of charitable institutions, among which are a general establishment for the relief of the poor, 14 almshouses, 3 hospitals, a house of industry, and St. Leonard's, a spacious infirmary outside the gates.—52° 15' N. lat., 10° 32' E. long.

BRUNSWICK, a town in Cumberland County, state of Maine, in N. America, situated on the riv. Androscoggin at the falls, 26 m. N.N.E. of Portland, in 43° 57' N. lat., and 69° 59' W. long.

Bowdoin college, established at this town, was incorporated in 1794; it derives its name from the Hon. James Bowdoin, who endowed it with 6000 acres of land in Lincoln County, in the same state, and with some other property. By the legislature of Massachusetts this college was further endowed with six townships of land, and an annual grant of 3000 dollars was made for its further support. This

money payment was continued for a few years by the legislature of Maine after the separation of the state from Massachusetts. The college is built on a plain near the Androscoggin. It is under the legislative government of a board of 24 trustees, and the executive government of 58 overseers. The number of professors in 1834 was 11, besides a president; of undergraduates, 155; of Alumni, 717. The Maine medical school in connexion with the college was established in 1820, and in 1833 contained 103 students. The college possesses a good philosophical and a chemical apparatus, a cabinet of minerals, and a library of about 8000 volumes, in addition to libraries belonging to the students containing 6000 volumes. A weekly paper called the *Escritoire* was established by the students in 1826, and has since been regularly published. The town has the advantage of a considerable water-power, owing to its position near the falls of the Androscoggin, which is employed in some mills and manufacturing establishments.

The pop. of the town in 1820 was 2954, and at the census of 1830 was 3747.

BRUNSWICK, NEW. [NEW BRUNSWICK.]

BRUNTISLAND. [FIFE.]

BRUSSELS, called by the Flemings 'Brussel' in Latin 'Bruxellæ,' and by the French 'Bruxelles,' the capital of the kingdom of Belgium, in the prov. of S. Brabant, is in 50° 50' N. lat., and 4° 22' E. long.

This city is built upon the Senne, a riv. which rises in the comm. of Naast, in Hainaut, and, flowing to the N.W. passes through Soignies and Steenkerque. Changing its course to the N.E., it enters S. Brabant, and flows past Hal to Brussels and Vilvorde, enters the prov. of Antwerp near Malines, and falls into the Dyle at Battenbroeck. The Senne enters the city of Brussels by two branches, one of which passes by the old market-place, and the other crosses the garden of the Chartreux. It forms four islands in the interior of the city, the two principal of which are called Saint Gery and Bon Secours. The width of the river where its different branches unite, at the fish-market, is about 30 ft., and its ordinary depth is 5 ft., which diminishes in summer, and increases considerably in winter. To remove this disadvantage, the authorities of Brussels projected a canal in 1460, to follow the course of the riv.; but the project was successfully opposed after 70 years of litigation by the city of Malines. A new plan was then adopted, and a canal was begun in 1650, which proceeded parallel to the Senne from Brussels to Vilvorde, when its course was directed towards the Rupel, leaving Malines to the right, and continuing in a straight line to Willebroeck, where it joined the Rupel, opposite to Boom. This canal, which was opened in 1561, cost nearly 2,000,000 of francs (166,000*l.*). The city of Brussels is 50 ft. above the level of Willebroeck, which difficulty has been overcome by means of five locks.

Another canal has lately been constructed between Brussels and Charleroy; the fall from the latter town to Brussels is 360 ft., and there are 55 locks. This canal commences at the Sambre, about 1100 yards above Charleroy, near Hal it crosses the Senne by means of an aqueduct of three arches, and continues in a direct line towards Brussels, where, having repassed the Senne by another aqueduct of the same number of arches, it terminates in the *Canal de la Foest* of the city: this canal was finished in 1830.

The greatest extent of Brussels from N.N.E. to S.W. is about one mile and a quarter, and its breadth about two-sixths of a mile. In form it is pear-shaped, the narrow part being to the W. The town is partly built on the slope of a hill, and when seen from the W., has the appearance of a fine amphitheatre. Owing to the inequalities of surface, Brussels has been compared with Genoa and Naples. It is inclosed by a brick wall, which has eight gates, bearing respectively the names of the Antwerp, Schaerbeck, Louvain, Namur, Hal, Anderlecht, Flanders, and the Canal-gates. These gates communicate with the roads, leading to different parts of the kingdom, with the centre in Brussels as the capital. The Antwerp gate conducts to Malines and Antwerp; Schaerbeck gate to the village of the same name and the castle of Lachon; Namur gate, through the forest of Soignies to Waterloo, Namur, and Charleroy. Anderlecht gate conducts to the high road to France; and Flanders gate to the city of Ghent.

The origin of Brussels reaches back to the seventh century. The first buildings were erected in the island of S.

Géry, so named after St. Géry, bishop of Cambrai, who built a chapel on the spot. It is said that the name of the city is derived from the bridge (called in the Flemish language *brugh*) which was thrown over the river. In the tenth century the Emperor Otho the Second inhabited a castle in the island of St. Géry. The city was inclosed with walls in 1044 by Lambert Baldric, count of Louvain; but the walls were removed and the city enlarged in 1369. Two dreadful fires occurred in 1326 and 1405. It is said that, on the first occasion, 2400, and on the second 1400 houses were destroyed. If these numbers are at all correct, the city must then have been of considerable size. The prosperity of Brussels was greatly increased in the twelfth century by the establishment of the manufactures of cloth and fire-arms: the former was introduced from Bruges and Ghent, and the latter from Namur.

The first siege to which the city was exposed occurred in 1213, when it was taken by the English. In 1314, in consequence of incessant and long-continued rains, a contagious disorder carried off so many of the citizens that 60 were buried in the same grave. In 1370 the Jews were banished from the city and prov., and their property, amounting to more than 12,000,000 of florins, was confiscated.

Brussels was taken by surprise in 1488 by Philip of Cleves. On regaining possession, the emperor Maximilian, suspecting the inh. of having been in league with Philip, deprived the city of various privileges, which were bestowed upon Malines. In 1489 Brussels was visited by the plague, which prevailed to such a degree that the people died in the streets. By a similar visitation in 1578, more than 27,000 inh. were carried off. The tyranny of the Spanish governor, the duke of Alba, occasioned about 10,000 artisans to leave Brussels in 1567, many of whom settled in England.

In 1695 this city was bombarded by Marshal Villeroi, who demolished upwards of 4000 buildings, including the stadthouse and 14 churches. In 1708 it was again besieged by the elector of Bavaria, but was relieved by the army under the duke of Marlborough. In 1746 Brussels was taken by Marshal Saxe, who laid the inh. under heavy contributions: it was restored to Austria at the peace of Aix-la-Chapelle. The Austrian Netherlands having been conquered by the French in the early part of the war of the French revolution, Brussels was declared by the directory to be the chief place in the dep. of the Dyle. On the 1st of February, 1814, the Prussian army took possession of this city, which, under the provisions of the treaty of the same year, became one of the capitals of the newly-formed kingdom of the Netherlands. On the separation of Belgium from Holland at the revolution of 1830, the movements leading to which began in Brussels, this city became the capital of the new kingdom and the seat of government.

Brussels contains about 300 streets and squares, besides numerous lanes and courts. Several of the streets are wide and airy; the houses are lofty and well built, and great care is taken to preserve their external cleanliness and neatness. The square of the great market-place, called *La Grande Place*, situated in the centre of the city, is a regular parallelogram, surrounded on all sides by handsome buildings. The *Hôtel de Ville* and the halls of many trading companies occupy two of the sides. Some other squares, the *Place Royale*, *Place du Grand Sablon*, and the *Place Saint Michel*, are remarkable for the regularity and beauty of their buildings. Among the ornaments of the town are the public fountains, 29 in number, erected in different parts, which supply the inh. with water. One of these fountains, that in the *Place du Grand Sablon*, consisting of a beautiful group in statuary marble, was erected in 1751, under the will of the earl of Aylesbury, 'as an acknowledgment of the enjoyments he had experienced at Brussels during a residence of forty years.'

Churches.—The city contains twelve churches, eleven of which are appropriated to Catholic worship and one to the reformed religion: there is also a synagogue. Among the Catholic churches is the cathedral church of St. Gudule, a Gothic building in the form of a cross, with two large square towers at one end: the building of this church was begun in 1010; it contains a very remarkable pulpit, made of oak, and representing in bas relief the expulsion of Adam and Eve from Paradise. The tombs of several of the dukes of Brabant and numerous paintings are also in this church. The church of *Notre Dame de la Chapelle* was founded in 1134; it contains some fine statues by Du Quesnoy, and a marble altar designed by Rubens, besides several paintings

by eminent masters. The church of *Notre Dame des Victoires*, built in 1288 by the first duke of Brabant to commemorate a victory obtained over the bishop of Cologne, is an ornamented Gothic building with painted windows, and contains many valuable paintings and statues. The Protestant church formerly belonged to the convent of the Augustines.

Public Buildings.—The *Hôtel de Ville*, one of the finest Gothic buildings in the Netherlands, was begun in 1401, but was not finished till 1442. The tower, which is stated by several authorities to be 364 ft. high, is surmounted by a gilded colossal statue of St. Michael, 17 ft. high, which serves as a weathercock. The palace of the Fine Arts, situated in the *Place Royale*, was formerly the residence of the governors of Brabant; at present it contains a museum of paintings, the city library, and a cabinet of natural history. The library, which contains nearly 100,000 volumes, besides numerous manuscripts, is open to the public five days in every week.

The king's palace in the *Place Royale*, near the park, was built in 1784, for the residence of the governor of the Austrian Netherlands. Opposite to this palace is the hall of the Chamber of Deputies, which was formerly the palace of Justice. The palace of the prince of Orange is a modern building, which was finished for the residence of the prince in 1828; it is near the king's palace.

The most admired quarter of Brussels is called 'the Park.' About a century ago this was really what its name denotes, being then stocked with deer and other animals. The area, about 17 acres, now consists of three wide parallel avenues of trees, the tops of which are kept constantly cut, in order that the walks may be always dry. In one of these avenues, which is opposite the king's palace and the hall of the Deputies, are several busts of Roman emperors, sculptured in blue stone; many of these were mutilated during the conflict which occurred in the park at the revolution in 1830. The city is lighted with gas.

In the year 1784 an order was given by the Emperor Joseph the Second, forbidding the burial of any persons within the city, and directing the formation of burial-grounds outside the walls. Three of these were accordingly established, one near the 'Hal' gate, another by the Flanders gate, and the third, which is the largest, by the Louvain gate. In addition to these, the English inh. of Brussels have established two cemeteries, one on the road leading to the vil. of Veclé, and the other on the Louvain road.

The manufacture of lace is carried on to a considerable extent; the quality is very superior, and large quantities were formerly used in England. Many other manufactures are also prosecuted, among which are hats, stockings, calicoes, gold and silver lace, paper hangings, porcelain, hardware, and various chemical preparations used in the arts.

The pop. of the city was 84,004 in 1825, and 98,279 in 1830. The revolution which occurred in the latter year caused many mercantile men and persons attached to the former government to remove their establishments from Brussels to the Dutch provs., so that the pop. of the city was temporarily diminished. Other causes have since brought a considerable influx of inh., so that in 1835, when a census was taken, the numbers were found to be augmented to 102,702. It appears from the following figures that this augmentation has not proceeded from the natural increase of the people, but is rather to be ascribed to the attractions which in every country invariably draw considerable numbers from the country to the capital.

	Births	Deaths	Marriages
1824	3,812	3,029	691
1825	3,763	3,146	735
1826	3,923	3,078	862
1827	3,801	3,022	878
1828	4,117	3,069	957
1829	3,948	4,078	912
1830	3,988	4,028	800
1831	4,022	3,548	944
1832	3,705	4,676	668
1833	3,989	4,277	866
1834	4,230	3,863	1,092

The ages of the persons who died in 1834 were as follows: 1116 under 1 year; 706 from 1 to 5 years; 183 from 5 to 14; 95 from 14 to 20; 283 from 20 to 30; 282 from 30 to 40; 245 from 40 to 50; 210 from 50 to 60; 292 from 60 to 70; 278 from 70 to 80; 156 from 80 to 90; 16 above 90 years; 1 age unknown; total, 3863. French is now the

common language of the pop. of Brussels, though many of the poorer classes still speak Flemish also; and some of them speak only the latter language.

The imposition of municipal taxes upon provisions and other necessary articles brought into the city makes us acquainted with the quantities consumed. During the year 1834 the consumption of the principal articles was as under:—

Wine	237,880 gallons.
Spirits and liqueurs .	851,025 "
Beer	6,397,836 "
Oxen	9,891 in number.
Calves	16,092 "
Sheep and lambs ...	22,557 "
Pigs	3,136 "
Meat (killed)	1,703,281 lbs., making
Fresh fish	20,059½ value.
Codfish	966 tons.
Stockfish	645 cwt.
Wood for fuel	585,165 cubic feet.
Charcoal	134,912 bushels.
Coal	59,633 tons.

Brussels contained, in 1832, eight communal, and 72 private schools; in the former there were 1522 male, and 1215 female scholars; and in the latter, 929 male and 1405 female scholars. There are besides several establishments for the instruction of poor children, which are supported by private contributions. Among these are a Lancastrian school, an infant school, and a Sunday school, conducted like those in England.

The city supports several hospitals and charitable institutions. One of these, the Hospital of Saint Peter, was originally founded for the reception of crusaders returning wounded from the Holy Land: it is now appropriated to the care of persons suffering under dangerous complaints. Ophthalmic patients are also received, and young children. It is likewise used as a lying-in hospital, and one division is allotted to the reception of sick persons who pay for their support and attendance, and towards whom every possible care is extended. Attached to this hospital are very spacious and well-kept gardens and commodious baths. There is an establishment for relieving distressed Englishmen who may be at Brussels, and for providing the means, when necessary, for conveying them to England. This institution was established in 1815, and is under the especial patronage of King Leopold.

The mean temperature of Brussels throughout the year 1833, as ascertained by observation at the Royal Observatory, was 52° Fahr. The greatest heat occurred in June, when the centigrade thermometer stood at 24.73, equal to 76½° Fahr.: the greatest cold occurred in January, when the centigrade thermometer stood at 3.23, or 26° Fahr. Observations on the atmospheric pressure during the same year at the same establishment give as the maximum (on the 8th January) 775.29 millimètres, or 30.523 inches. The minimum pressure was observed in September, when the mercury in the barometer stood at 726.10 millimètres, or 28.556 inches: the mean pressure for the year was 750.67 millimètres, or 29.554 inches. The number of days on which it rained was 180; there occurred 39 days of frost and 25 of fog: it hailed on 5 days and snowed 11, and there were 7 thunder-storms during the year—three of these occurred in June and the same number in July. The prevailing winds were from the W. and S.W., and occupied 182 days, or one-half the year. From the E., N.E., and S.E., it blew 104 days; from the N. 30; from the S. 25; and from the N.W. 24 days.

Brussels is the seat of the supreme court of justice and of the court of appeal. The assizes for the prov. of S. Brabant are held in the city four times in each year.

At the vil. of Lacken, 9 m. N.E. from Brussels, is the summer palace of the king, built in 1782, by the Archduke Albert. This palace stands in a fine situation, commanding fine views of Brussels and its environs. [BELGIUM, SOUTH BRAHANT.]

(Gautier, *Voyage dans les Pays Bas*; Vander Maelen, *Recueil des Documents Statistiques*; *Staten Uitgegeven door de Commissie voor de Statistiek*, 1829; *Official Papers laid before the Legislative Chambers of Belgium*, 1834.)

BRUTON. [SOMERSET.]
BRUTUS, LUCIUS JUNIUS, son of Marcus Junius Brutus, and of Tarquinia, sister of Tarquinius Superbus (as Bayle

has sufficiently proved in opposition to the execution of Moreri), having early lost his father and elder brother by the cruelty of Tarquin, feigned imbecility of intellect, in order to secure personal safety. A prodigy which had occurred at Rome, the appearance of a snake in a wooden pillar of the palace, occasioned great anxiety among the Tarquinii, and Titus and Aruns, sons of the tyrant, were deputed to obtain some explanation from the oracles of Delphi. The journey at that time was considered eminently hazardous, through unknown lands, and seas yet more unknown, and Brutus, a name which Lucius Junius had received cut of contempt, accompanied the young princes, more as a buffoon to assist in their amusement, than as a companion to share the perils of their journey. On his entrance into the temple the offering which he made to the god was a bar of gold enclosed in a staff of cornel-wood hollowed for its reception, and intended to be emblematic of the votary's own situation. When the princes had finished their commission they inquired in the gait of youth which of them should reign at Rome hereafter. A voice from the adytum replied, 'That one of you shall obtain sovereignty at Rome who shall first kiss his mother.'

Titus and Aruns, in order to deprive their brother Sextus of participation in the chance, agreed to mutual secrecy and to the decision by lot of their own precedence. Brutus with more sagacity affixing a different interpretation to the response of the oracle, pretended to stumble, and kissed the earth, when he had fallen, as the common mother of all mankind.

After the atrocious violence offered by Sextus Tarquinius to Lucretia, Brutus was one of her kinsfolk whom the injured matron summoned to hear her complaint, and to witness her suicide. He plucked the reeking dagger from her bosom, and to the astonishment of all present, throwing aside the semblance of fatuity which he had hitherto assumed, he solemnly devoted himself to the pursuit and punishment of the whole race of Tarquin, and the abolition of the regal name and power at Rome. The populace was easily excited to insurrection. Brutus carefully avoided any personal interview with Tarquinius Superbus, who was dethroned and exiled, and on the change of government which followed, himself and Tarquinius Collatinus, widower of Lucretia, were made the chief magistrates under the title of consuls. This revolution occurred 245 years after the foundation of Rome, and 507 a.c.

Collatinus was speedily removed from his new office on the ground that he bore the name of Tarquinius, and was connected with the expelled family. The latter of these objections applied also to Brutus, who was descended from the Tarquinii by the maternal side; but it does not appear that any difficulty was raised against him, and indeed it was chiefly through his agency, perhaps altogether at his suggestion, that the abdication of his colleague was procured. The place of Collatinus was supplied by P. Valerius. On the discovery of a plot for the restoration of the Tarquinii, their property was confiscated; their moveables were given up to plunder; their landed estate lying between the city and the Tiber was consecrated to the god of war, and became the celebrated *Campus Martius*. The conspiracy involved many of the noblest Roman youths, and among them Titus and Tiberius, sons of Brutus by a sister of the Vitellii, who were its principal leaders. The culprits were tried and condemned by their own father, who also witnessed their punishment. They were scourged and beheaded in his presence, not without his betraying some marks of paternal emotion during the execution of public duty. Livy seems unequivocally to applaud this unnatural act, but Plutarch more justly deprecates it by saying that 'he shut up his heart to his children with obdurate severity.'

Several Etruscan cities took arms under Porcenna, in behalf of the Tarquinii, and Brutus headed the cavalry by which they were opposed. He was recognised by Aruns, who denouncing him with the bitterest animosity as the chief instrument which had occasioned the expulsion of his family, and as now braving it under borrowed ensigns of dignity which he had transferred to the consulate, clapped spurs to his horse and selected him as an opponent in single combat. Brutus eagerly met the defiance, and so great was the fury of the encounter, that each regardless of his own safety sought only the destruction of his adversary. Their shields were mutually pierced, and each fell dead from his horse transfixed by the lance of his enemy.

Such is the story of Lucius Junius Brutus given by Livy (i. 56, &c. ii. 1-6). A public funeral was decreed to him; the matrons of Rome, in honour of the champion and avenger of Lucretia, wore mourning for him during a year; and, according to Plutarch, a brazen statue with a drawn sword in his hand was erected to his memory, and placed together with those of the kings. (See Niebuhr's *Roman History*, vol. i., 'Commentary on the Story of the last Tarquins.')

Voltaire has written a tragedy on the history of Brutus, disfigured by the pining love of Tullia, a daughter of Tarquinius, for Titus, the son of the consul; and an earlier dramatist on the same subject, Madlle. Bernard, in a play under the same title, acted with great success in 1647, makes both the sons of Brutus in love with a daughter of one of the Aquilii, a leader of the conspiracy, and also introduces Valeria, a daughter of the Consul Valerius, as enamoured with Titus, who does not acknowledge any mutual flame.

BRUTUS, DECIMUS JUNIUS, is believed to be the son of a father of the same name, who was consul A.U.C. 676. On his adoption by Aulus Postumius Albinus he took the name of the family into which he was received, so that he sometimes appears on medals as *Albinus Bruti Allius*. Shakspeare has called him Decius, and both that poet and Voltaire in many particulars have confounded him with Marcus Junius. Of his early history nothing is known, but it is plain from the share which he took in the murder of the Dictator how deeply he enjoyed his confidence, and how extensive was the influence which he exercised. On the Ides of March, when all things were prepared for the assassination, the plot was nearly frustrated by an announcement from Cæsar that he should not attend the meeting of the senate, being deterred by some evil dreams which had visited both himself and his wife Calpurnia, and by indisposition. D. Brutus was employed to dissuade him from this inopportune resolution, and he succeeded by ridiculing the soothsayers, by showing Cæsar that the senators assembled by his orders would think themselves insulted if they were dismissed on pretexts so frivolous, and above all by assuring him that it was intended on that day to nominate him king of all the provinces 'out of Italy,' and to decree that he might wear a crown except within the limits of Italy. (Plutarch, *Cæsar*, lxiv.)

The affection which the murdered Dictator bore to Decimus Brutus was exhibited in his will, in which he named that false friend among other persons to inherit his fortune in case of the failure of direct heirs. Cæsar also had appointed him commander of his cavalry, consul for the succeeding year A.U.C. 711, and governor of Cisalpine Gaul, in which province Brutus attempted to maintain himself on the banishment of the conspirators. The newly-raised legions by which he hoped to support his authority were chiefly framed of gladiators, who gradually deserted; till Brutus, fearful of being left alone, after having been defeated at Mutina, endeavoured to make his way to the army in Greece. For this purpose he disguised himself in the habit of a Gaul, and attempted to pass through Aquileia to Illyricum. Although well acquainted with the language of the country which he traversed, he unfortunately fell into the hands of some banditti. Having inquired of his captors to which of the Gaulish petty princes the district in which he had been taken belonged, and having heard that it was ruled by Camillus, a chieftain whom he had formerly obliged, he entreated to be led to his presence. Camillus received him with apparent goodwill, and sternly rebuked the robbers for having injured so great a man; but to Antonius, whom he secretly informed of his capture, he employed far different language. Antonius, affecting compassion, refused to see the prisoner, and ordered Camillus to put him to death, and to send him his head. (Appian, *de Bellis Civilibus*, iii. *ad fin.*)

BRUTUS, MARCUS JUNIUS, son of Marcus Junius Brutus, by Servilia, sister of Cato of Utica, was born at Rome A.U.C. 668, B.C. 86. He was traditionally descended from Lucius Junius, the expeller of the Tarquins, a descent asserted by himself in a medal commemorating the assassination of Julius Cæsar, but which is denied by Dionysius of Halicarnassus. A passage in the 1st Philippic of Cicero (c. 6) corroborates this origin by stating that the expeller of kings, L. Brutus, has propagated his stock through 500 years, in order that a descendant might emulate his virtue by again freeing Rome from regal domination. But this allusion, which suited the purpose of Cicero, is only a rheto-

rical flourish. Plutarch, in the beginning of his life of M. J. Brutus, assumes his descent from the first Brutus, conformably to his practice in such cases, without troubling himself as to the credibility of the fact. He is sometimes called Q. Cæpio Brutus both by Cicero and Dion Cassius, and also on several of his medals, where Q. *Cæpio Brutus Procos. or Imp.* occurs. He owed this name apparently to his adoption by his maternal uncle, Q. Servilius Cæpio. On an unjust divorce from his first wife, Appia Claudia, he married Portia, the widow of Bibulus, and daughter of his maternal uncle Cato, under whose inspection he had been most carefully educated in philosophy and letters, after the loss of his father, who was put to death by Pompey in the war between Marius and Sylla. Plutarch says that he was acquainted with all the Grecian systems of philosophy, but particularly attached to those of Plato's school. Afterwards, at least, he certainly adopted the Stoical tenets and discipline. When Cato, B.C. 59, was appointed under a law passed by the influence of Clodius to annex Cyprus to the Roman empire, Brutus accompanied his uncle, and during his residence in that island he appears to have been guilty of certain pecuniary extortions by no means consistent with integrity, but perhaps too much countenanced by the habits of the times.

When the civil war broke out between Julius Cæsar and Pompey, Brutus sacrificed his private resentments to that which he believed to be the better cause of the two, and appeared under the banners of the latter. After the defeat of Pompey at the battle of Pharsalia, Brutus was particularly distinguished by the clemency of the conqueror, who not only bestowed upon him personally his especial favour, but granted pardon through his interference both to Cassius, who had married his sister, and to Deiotarus, king of Galatia, for the latter of whom Brutus pleaded in a set oration. Scandal attributed these acts of grace to a remembrance which Julius Cæsar entertained of a youthful intrigue with Servilia; and a false report was circulated that Brutus was a son of the dictator. But the words which Suetonius has put into the mouth of Cæsar when he perceived Brutus among his assassins, 'And are you among them, my son?' may be received as indicating affection and familiarity rather than as any acknowledgment of consanguinity. Brutus was only 15 years younger than Cæsar himself.

When Cæsar undertook his expedition into Africa against Cato, he committed to Brutus the government of Cisalpine Gaul, which was administered with wisdom and humanity, and he afterwards preferred him to Cassius in a rivalry for the post of Prætor Urbanus. Notwithstanding these distinguished favours, Brutus was one of the principal assassins on the Ides of March. He retired to Athens, when Marcus Antonius had produced a re-action in the people of Rome, where he devoted himself partly to literature and partly to preparation for war. In the end Antonius and Octavianus on one side, and Brutus and Cassius on the other, met at Philippi, in Macedonia. The battle was fiercely contested, but ended in the total rout of the exiles; and Cassius, unwilling to survive his defeat, fell upon his own sword, receiving as a eulogy from Brutus, when he heard of the deed, that he was 'the last of the Romans.'

Brutus, in a second battle fought not long afterwards near the same spot, obtained a partial victory; but perceiving himself surrounded by a detachment of his enemy's soldiers, and in danger of being made prisoner, he despaired of ultimate success, and after more than one of the friends about him had declined the painful duty, he delivered the hilt of his sword to Strato, and throwing himself on its point, expired in the 44th year of his age.

Of his works, which were much praised by contemporaries, it is not certain that any have descended to us. His eulogy on Cato is certainly lost; some few letters in Greek, which are probably not genuine, have been printed in the collections of Aldus, Cujacius, and H. Stephens. He is also said to have made a kind of abstract or epitome of the history of Polybius, of the annals of C. Fannius, and of the history of L. Cælius Antipater. His Latin letters to Cicero have been characterised by Markland as 'silly barbarous stuff,' which he 'cannot read without astonishment and indignation.' Their authenticity on the other hand is strongly supported by Conyers Middleton in answer to an attack by Tunstall. But Ruhnken expressed his opinion against them, and also F. A. Wolff.

When Brutus and Cassius were about to leave Asia for their Macedonian campaign, it is said that an apparition

admomished Brutus of his approaching fate. Brutus was of a spare habit, abstemious in diet and in sleep. One night, when he was overcome by watching, and was reading alone in his tent by a dim light at a late hour, while the whole army around him lay wrapped in sleep and silence, he thought he perceived something enter his tent and saw 'a horrible and monstrous spectre standing silently by his side. "What art thou?" said he boldly; "art thou God or man, and what is thy business with me?" The spectre answered, "I am thy evil genius, Brutus. Thou wilt see me at Philippi!" to which he calmly replied, "I'll meet thee there." When the apparition was gone he called his servants, who told him that they had neither heard any noise nor seen any vision.' He communicated his adventure on the next morning to Cassius, who professed the philosophy of Epicurus, and argued on the principles of his sect against the existence of such beings as demons and spirits; or, admitting their existence, denied that it was probable they should assume a human shape or voice, or have any power to affect us; in fine, he attributed the whole incident to sleeplessness and fatigue, which, as he justly remarked, suspend and pervert the regular functions of the mind. On the night before the second battle, 'they say,' continues Plutarch, 'that the spectre again appeared and assumed its former figure, but vanished without speaking.'



[Gold. Brit. Museum. Weight 114 grains.]

Plutarch also remarks that there is a diversity in the statements respecting the death of Portia; that Nicolaus the philosopher and Valerius Maximus affirm, that being prevented from suicide by the constant vigilance of friends who surrounded her couch, she snatched some burning embers from the fire and held them in her mouth till she was suffocated. If however we admit the authenticity of a letter attributed to Brutus, this account must be a fabrication; for he laments in it the death of Portia during his own lifetime, describes her distemper, and praises her conjugal affection. (Plutarch, *Brutus*, cap. 53.)

Voltaire wrote a tragedy, 'La Mort de César,' from which, contrary to the usage of the stage, he excluded all female characters. His plot is founded on an hypothesis which we have shown to be false, that Brutus was the son of Cæsar; and although the play abounds in fine lines, it does not appear to have been by any means successful. (Plutarch's *Brutus*; Appian, lib. 15, 16; Cicero's *Letters and Orations*; Dion Cassius.)

BRUYERE, JEAN LA. Notwithstanding the well-merited popularity of La Bruyère's works, scarcely anything is known of his private life. No greater eulogium, perhaps, can be passed upon philosophy than that he who had so acutely observed the inconsistencies, foibles, and passions of mankind, should have left few or no traces of them in himself. La Bruyère was born in 1644, near Dourdon in Normandy. After filling the office of treasurer of France at Caen he removed to Paris. He was appointed teacher of history to the Duke de Bourgogne, under the direction of Bossuet, and passed the remainder of his life in the service of his pupil, in the quality of *homme de lettres*. In 1687 he published his work entitled 'Characters*,' was admitted into the French Academy on the 15th June, 1693, and died of apoplexy at Versailles on the 10th of May, 1696.

He is represented by the Abbé d'Olivet as a philosopher whose happiness consisted in passing a life of tranquillity, surrounded by his friends and his books, in the choice of both of which he showed considerable judgment. He was polished in his manners, but reserved in his conversation, and free from pretension of every kind.

Of all La Bruyère's friends, Bossuet, to whom he had attached himself from a sense of gratitude, sympathized with him the least in character. Several anecdotes connected with those times give a faithful picture of their walks

* Numerous editions of the 'Characters' of La Bruyère have appeared since 1687; but the best is that of 1837, 2 vols. 8vo., with a life of La Bruyère, by Monsieur Suard, a prelatory notice and original notes by Monsieur Auger, to which are annexed the 'Characters' of Theophrastus, with additions and notes by M. Schweighæuser, and an analytical table.

in the delightful gardens of Versailles, and represent with striking effect the imperturbable and acute La Bruyère archly smiling at the impatience, passion, and intellectual despotism of his companion. It was, no doubt, gratitude to his friend that betrayed him into the weakness of using his pen in favour of the Bishop of Méaux against Fénelon in the absurd affair of *Quietism*. Upon this theological controversy, the ridiculousness of which could not fail to be apparent to a man like La Bruyère, he left some dialogues; and if we cannot wholly excuse him for having written them, we must admit that he showed his good sense by not publishing them.* Among the somewhat large sacrifices which he thought it expedient to make to the prevailing opinions of the day, his work frequently gives indications of a bolder manner of thinking—the precursor of the philosophy of the succeeding century. It even appears to have been his wish to let posterity into the secret of his prudent dissimulation. 'Satire,' says he, 'is shackled in him who is born a Christian and a Frenchman. Great topics are interdicted him. He enters upon them now and then, but soon turns aside to minor subjects, to which he imparts an interest and an importance by his genius and his style.'

Since it was this twofold relation of subject of Louis XIV. and of Christian (he ought rather to have said Papist) that imposed upon La Bruyère the trammels of which he complains, it may be inferred, that notwithstanding his cold eulogies of the absolute monarch and his gloomy theology, he by no means participated in that respect for despotism and for the abuses of Popery which so strongly characterized the age of Louis XIV. The persecutions which rewarded the generous and liberal principles advocated, in his 'Tele-machus,' by the amiable Archbishop of Cambrai, whose domains were respected even by invading enemies, as well as those suffered by Molière, the inimitable delineator of the 'Tartuffe,' turned La Bruyère aside to less dangerous subjects, to the details of social, and the follies of private life.

Malignity, however, assailed him, even within the narrow limits to which he had confined himself, of criticism on the morals and the habits of his times. Upon completing his 'Characters,' he showed the book to M. de Malézieux, who said 'this will procure you many readers and many enemies,' a prediction which was fully accomplished, for while the book was read with avidity the moment it appeared, intentions were attributed to the author of which he was certainly innocent. The originals of La Bruyère's portraits were discovered, as it was impudently pretended, and their names were published in a key to the Characters, which thus formed a kind of scandalous commentary, in which the persons designated could not complain that they were calumniated, though they were held up to public ridicule.

La Bruyère is, perhaps, the only French moralist familiarly read in his own country. His observation, though rarely profound, is always judicious, natural, and nicely discriminative; and if his views of human nature are not very extensive, he amply compensates for the deficiency by the closeness of his inspection. He places the most true and common characters in a new and unexpected light which strikes the imagination, and keeps attention alive. Perhaps he too often affects strong contrasts and violent antitheses, and in wishing to avoid sameness he falls into the error of attempting too much variety, in which he loses his individuality. His style is characterised by strong power of delineation, and the talent of a great painter must undoubtedly be conceded to him, though he is not altogether free from the charge of occasional affectation.

If it be true, as has been remarked, that Theophrastus* whose work was studied and translated by our author, may be said to have formed La Bruyère, it must be admitted that this is the highest praise that we can give to the Greek author. But to compare, as some have done, the characters of the Greek with those of the French philosopher, is the height of absurdity: nothing is more false than this manner of drawing parallels.

It is impossible to judge rightly or even to understand the Characters of Theophrastus, without possessing accurate notions of the political, moral, and social condition of the

* *Sieur de la Bruyère's* posthumous Dialogues upon 'Quietism,' continued and published by Louis Elias Dupin, Paris, 1699, 12mo.

* Hieronymus Benserotus published in France the first translation of the 'Character' of Theophrastus (1613) in a small volume in 12mo. This translation has been forgotten since the appearance of that by La Bruyère in 1688. There are three other French translations of Theophrastus, one by P. G. Leveque, 1783; another by Belin De Balla, 1790; another by Carré, 1799.

people whose features they represent. Voltaire showed his want of this kind of knowledge when he said that Aristophanes was neither a poet nor a humourist. Shakspeare and Molière necessarily require commentators (at least, to be thoroughly understood); and if two thousand years hence foreigners shall undertake to criticise them, they must first study the reigns of Elizabeth and of Louis, in order to avoid rash decisions and ill-founded judgments. If we compare for a moment only the political and social position of the Athenians with the reign of Louis XIV., before whose despotism and ostentation men of all ranks in France obsequiously bowed; if we identify and familiarize ourselves with the respective circumstances under whose influence the two authors wrote,—we shall no longer entertain the idea of comparing Theophrastus with La Bruyère: the sole resemblance between them consists in the minuteness and accuracy of their observation, and in the justness and spirit of the strokes by which each has delineated his characters.

La Bruyère's work, stamped as it is with the impress of a sound judgment and a good-natured satire, is one of those friends whom we always consult with pleasure and advantage. It anticipates our knowledge of the world and perfects it; and although the manners and characters therein delineated may undergo changes and modifications, its interest will be always the same, because, like all great works which take nature as their basis, it will always be true.

BRUYN, BRUIN, BRUN, or LE BRUN, CORNELIUS, for his name is printed in different books in all these ways, was a painter and traveller of some eminence. He was born at the Hague in 1652. In 1674 he quitted his native country to explore by rather a novel route Russia, Persia, the Levant, and the East Indies, and he did not return home for many years. His first work, 'Voyage to the Levant,' was published in folio at Paris in 1714. It relates chiefly to Egypt, Syria, the Holy Land, Rhodes, Cyprus, Scio, and Asia Minor, and is embellished with more than two hundred engravings, representing eastern cities, ruins, natural productions, costumes, &c. All these plates were executed from drawings made by himself on the spot, and, though somewhat hard, there is a great deal of truth and nature in them. His second work, 'Travels through Muscovy, in Persia, and the East Indies,' was published at Amsterdam by the brothers Wetstein in 1718; it contains upwards of 300 engravings, and is also in folio. Many of these plates, representing eastern ceremonies, ancient edifices, animals, birds, fish, plants, and fruit, are admirably executed. Several of the engravings are devoted to the ruins of Persepolis. On the whole these are two splendid books. Another edition of the second work was brought out at Rouen in 4to. in 1725, and is said to be valuable on account of corrections and notes made to the text by the Abbé Banier, but with this French edition we are unacquainted. In this second work the reader may find much information concerning the coasts of Arabia, the island of Ceylon, Batavia, Bantam, and parts of Russia. At Batavia, where there were many Chinese colonists, he carefully investigated some of the manners and customs of that extraordinary people. He was residing on that island when the English buccaneer William Dampier, or, as he calls him, 'the famous Captain Damper,' arrived there from Ternate, after a most extraordinary voyage and series of adventures. [DAMPIER.] The value of Bruyn's second work is further increased by an account of the route taken by M. Isbrantia, the ambassador of Muscovy, through Russia and Tartary to China.

In 1714, the year in which he published his first great work, Bruyn put forth in Holland a very small disputative treatise, entitled 'Remarks on the engravings of old Persepolis, formerly given by Messieurs Chardin and Kœmpfer, and the mistakes and errors in them clearly pointed out.' In this pamphlet he defends himself for the differences between the plates of his own work and those of Chardin, and shows in what portions of the engravings his own are the more correct. His 'Remarks' are in Dutch, his travels in French; but the 'Remarks' were afterwards translated into French, and published in an appendix to his second great work in 1718.

The compilers of cyclopædias and biographical dictionaries have gone on repeating one after the other, and evidently without looking into the old traveller's books, that, though curious and instructive, Bruyn is inelegant in his style, and not always exact in his facts. Now in reality his style, though exceedingly simple, and somewhat deficient in

warmth and picturesque beauty, is very far from being inelegant, and his exactness, a quality he had in common with so many old travellers of his nation, is everywhere admirable. For the fidelity of his descriptions of most of the places he visited in the Levant, we can vouch from our own personal observation. He was not credulous himself, and he several times censures the credulity of explorers who had preceded him.

BRYA'CEÆ, a name sometimes given to the natural order Musci.

BRYANT, JACOB, was born at Plymouth in 1715; his father, who held a post in the custom-house of that town, was transferred in the seventh year of his son's age to Kent, in which county Jacob Bryant received the first part of his education at Luddesdown, near Rochester, whence he was afterwards removed to Eton. Having been elected to King's College, Cambridge, of which society he became fellow, he graduated A.B. in 1740, and A.M. in 1744. Being early distinguished for his attainments and love of letters, he was appointed tutor to Sir Thomas Stapylton, and afterwards to the Marquis of Blandford and his brother Lord Charles Spencer, at that time at Eton. A complaint in the eyes obliged him for a short time to relinquish this occupation, but having returned to it, he was rewarded in 1756 by the appointment of secretary to the Duke of Marlborough, who, continuing his patronage when nominated Master-General of the Ordnance, took him as a secretary and travelling companion during his command in Germany, and gave him a lucrative situation in his own public office. His circumstances thus being rendered easy, he devoted his whole life to literature, and twice refused an office which has frequently been much coveted by others—the Mastership of the Charterhouse.

The history of his life is embraced in that of his publications, all of which are distinguished by learning, research, and acuteness, but are more or less disfigured by fanciful conjectures and wild speculations. His first work was 'Observations and Inquiries relating to various Parts of Antient History,' Cambridge, 4to., 1767. In contradiction to Bochart, Grotius, and Bentley, he here, among other things, contends that the wind Euroclydon, mentioned in Acts xxvii. 14, ought properly to be termed Euroaquilo; and in opposition to the same writers, together with Cluverius and Beza, he affirms that the island Melite, mentioned in the last chapter of the same book, is not Malta. The remaining subjects treated of in this volume are very obscure and very remote from common inquiry. He professed to throw light upon the earliest state of Egypt; upon the Shepherd Kings; and upon the history of the Assyrians, Chaldeans, Babylonians, and Edomites. Pursuing a similar course, he published in 1774 the first two volumes of the work upon which his fame chiefly depends—'A New System or Analysis of Antient Mythology, wherein an attempt is made to divest Tradition of Fable, and to restore Truth to its original purity.' It appeared in 4to., and was followed by a third volume in 1776. Besides the nations whose history he had formerly investigated, he now turned to the Canaanites, Hellenians, Ionians, Leleges, Dorians, Pelasgi, Scythæ, Indoscythæ, Ethiopians, and Phœnicians: pressing into his service every scattered fragment which his extensive reading enabled him to collect, and supporting his arguments by numerous forced and oftentimes false etymologies. One of his hypotheses was, that as all mankind sprang from the same stock, all existing languages might be traced to one original. The pursuit of radical terms was therefore, as he contended, the only sure means of discovering truth. He believed also that the heathen mythology was framed entirely upon perversions of the patriarchal history as recorded in the Old Testament; and, as has been well said, he saw the Ark in every thing. This publication involved him in much controversy, which he undertook in part anonymously, and in part, particularly in defence of the Apamean medals, in the Gentleman's Magazine. The Apamean medals were struck in honour of Septimius Severus, at Apameia, a town in Phrygia. The devices on them are a rainbow, a dove, a raven, and an olive-branch, and the legend NQE. This treatise was published separately in 1775, in 4to.; and Eckhel, the most learned numismatologist of his time, declared in its favour. In 1780 Bryant published with his name a tract which he had before printed and recalled, entitled 'Vindiciæ Flavianæ,' advocating the disputed testimony of Josephus to our Saviour. Priestley expressed himself as convinced by

the arguments in favour of the passages; but he afterwards engaged in controversy with Bryant on the difficult subject of Necessity. Bryant was a firm believer in the authenticity of the poems attributed to Rowley, and in 1781 he published two vols. duodecimo, containing 'Observations' upon them. In 1783 the Duke of Marlborough printed for private distribution an account of the gems in his own collection, the 1st vol. of which work was written in Latin by Bryant. In 1792 appeared a treatise 'On the Authenticity of the Scriptures and the Truth of the Christian Religion,' 8vo., executed at the request of the dowager Lady Pembroke; and two years afterwards, in 8vo., some 'Observations on the Plagues inflicted on the Egyptians.' But the work which engaged him in most dispute, and was more distinguished by his love of paradox than any other which he produced, was suggested by M. Le Chevalier's description of the plain of Troy. It appeared in 1796, 4to., and was entitled 'A Dissertation concerning the War of Troy and the expedition described by Homer, with the view of showing that no such expedition was ever undertaken, and that no such city in Phrygia ever existed.' It was scurrilously answered by Wakefield, and it provoked far more honourable replies from Mr. Morritt and Dr. Vincent. In the following year appeared a tract in 8vo., entitled 'The Sentiments of Philo-Judæus concerning the Greek ΛΟΓΟΣ.' Besides these, Bryant also wrote 'Observations on famous controverted Passages in Justin Martyr and Josephus,' and a pamphlet addressed to Mr. Melmoth. He closed his literary life by preparing for the press some remarks on very curious Scriptural subjects, written more than thirty years before. This 4to. vol. contained dissertations on the Prophecies of Balaam, the Standing still of the Sun in the time of Joshua, the Jaw-bone of the Ass with which Samson slew the Philistines, and the History of Jonah and the Whale. In the 7th vol. of the 'Archæologia' he furnished some 'Collections on the Zingara or Gipsy language;' and numerous juvenile or fugitive pieces were found among his papers in MS. The titles of some of them will sufficiently show that his pen was not always devoted to subjects of a grave nature. We need only mention a 'Dissertation on Pork,' and an 'Apoptosis of a Cat.'

His exemplary and protracted life was closed at his own residence at Cypenham, near Windsor, on the 14th of November, 1804, in consequence of a hurt which he received in the leg by a chair slipping from under him while taking down a book from an upper shelf. Such a death, as has been well remarked by a French biographer, was for a literary man to expire on the field of honour. His merits are very justly eulogized in a note on the second 'Dialogue of the Pursuits of Literature.' He left his very valuable library to King's College, Cambridge, 2000*l.* to the Society for the Propagation of the Gospel, and half that sum to the superannuated collegers of Eton, at the discretion of the provost and fellows.

BRYAXIS, a genus of coleopterous insects belonging to the family Pselaphids, which by some authors is arranged with the Brachelytra, but according to Latreille forms the third family of the section Trimeria. Technical characters:—antennæ long, from the third to the terminal joint gradually increasing in size; the three terminal joints forming a large knob; the last joint much larger than the rest, and somewhat conical in shape; the two basal joints large; maxillary palpi distinct, the apical joints robust; head rather large; thorax rounded at the sides; elytra very broad, and covering only the basal half of the abdomen.

The species of this and allied genera, though minute, are perhaps among the most remarkable of the Coleoptera; in the short wing-cases they appear to evince an affinity to the Brachelytra, but in the number of joints in the tarsi, a character generally considered of importance, they differ; they likewise differ from that tribe in having the terminal joints of the antennæ immensely large, and in many other characters. They are generally found during the winter and early part of the spring in moss. Nine or ten species have been recorded as British. (*Pselaphidae*.)

BRYONIA, the wild bryony of our hedges, *Bryonia dioica*, is a plant formerly much employed in rural pharmacy, but now disused. It is a perennial with large fusiform succulent roots, which have a repulsive nauseous odour. From these there annually springs a slender pale-green hairy branching stem, which climbs among bushes by means of its tendrils, in the manner of a cucumber, to which it is botanically allied, both belonging to the natural order Cuc-

urbitaceæ. The leaves are palmate, and rough on both sides with callous points. The flowers are small and white, with pale green veins, and are succeeded by little red berries, containing a very few seeds. Its principal use was on account of the powerful drastic properties of its root, which the French call, from that circumstance, *Navel du Diable* or Devil's Turnip. It is excessively bitter, and when dried purges in doses of 30 or 40 grains. Over doses are extremely dangerous, and even sometimes fatal. Its properties are apparently owing to the presence of a principle called bryonine, analogous to cathartine, which exists in about the proportion of 2 per cent. of the root.

Bryony-root should be gathered in the autumn, after the stem has turned yellow: it is cut into slices, which are strung upon a thread, and hung in the air to dry.

BRYOPHYLLUM, a succulent exogenous genus, belonging to the natural order Crassulaceæ, and remarkable for the singular property possessed by its leaves of budding from their margin. These leaves are of a succulent texture, and sometimes pinnated; they or their leaflets are of an oblong figure, with a deeply-crenelled border; when placed in a damp and shady warm place they sprout from the crevices and form young plants, a property unknown in the same degree in any other vegetable production. Physiologists, however, consider that traces of a similar power, exercised in another way, exist in all plants in their carpellary leaves from whose edges, forming plantlets, ovules, which are theoretically young buds, are constantly produced.

The only species is *Bryophyllum calycinum*, a shrub found in the Moluccas, with panicles of large pendulous greenish-yellow flowers. In this country it is a green-house plant but is apt to be eaten by mice.

BRZESE LITEWSKY. [GRODNO.]

B'UBALUS. [ANTELOPE, species 61. Ox.]

BUBO (zoology), a subgenus of owls (*Strigidae*), separated by Cuvier, and characterized by a small *concha* or ear aperture, and a facial disk, less perfect than in the subgenus *Syrnium* (*chats-huans* of the French). Two tufts of feathered horns of considerable size adorn the head, and the legs are feathered down to the toes.

EUROPEAN SPECIES.

Bubo maximus. *Strix Bubo* of Linnæus; *Le grand Duc* of the French; *Gufu*, *Gufu grande*, and *Gufu rosso* of the Italians; *Schuffut*, *Uhu*, *Grosse ohreude Fuchs* of the Germans; *Uff* of the Fauna Suecica; *Bahs* of the L. Austrians; *Great Owl*, or *Eagle Owl*, of Willughby, Pennant.

This, the largest of the Nocturnal Birds, is, there can be little doubt, the βῦας (Byas) of Aristotle (*Hist. Anim.* v. c. 3), and the *Bubo funebris* mentioned by Pliny in his chapter *de Inauspiciis Avibus* (lib. x. c. 12 and 13) on account of whose advent Rome twice underwent lustration. Upon one of these occasions the bird of ill omen penetrated into the very cella of the Capitol.

Geographical distribution.—Temminck places its habitation in great forests, and says that it is very common in Hungary, Russia, Germany, and Switzerland, less common in France and England, and never seen in Holland. He adds, that it is found at the Cape of Good Hope. Willughby observes that about Bologna, and elsewhere in Italy, it is frequent. Bonaparte† notes it as rare in the neighbourhood of Rome, and says that it is only seen in mountainous situations. It is said to extend eastward as far as Kinchatka.

Pennant states that it has been shot in Scotland, and in Yorkshire, from which county it was sent to Willughby. Latham adds Kent and Sussex as localities where it has been found. It is said to have been seen in Orkney; and four are stated to have occurred on the northern coast of Donegal in Ireland. The eagle owl then can be only considered as a rare visitant to our islands.

The following is Temminck's description:—Upper part of the body variegated and undulated with black and ochraceous, lower parts ochreous, with longitudinal black dashes. The feet white. Feet covered to the nails with plumes of a reddish yellow. Iris bright orange. Length two feet. The female is larger than the male; but the tints of her plumage are less bright, and she is without the white on the throat.

It sometimes varies, in having the colours less lively, and in being of inferior dimensions.

† Bonaparte, Fauna of Massimino, places it under the subgenus *Uhu*.
† 'Speciesio Comparativa.'

Food. Young roes and fawns, hares, moles, rats, mice, winged game, frogs, lizards, and beetles.

Nest. In the hollows of rocks, in old castles and other ruins; where the female lays two or three, but rarely four, round white eggs. Latham says two, 'the size of those of a hen.'

M. Cronstedt, who resided on a farm in Sudermania, near a mountain, had an opportunity of witnessing the devotion of these birds to their young, and their care in supplying them with food, even under extraordinary circumstances. Two eagle owls had built their nest on the mountain; and a young one, which had wandered away, was taken by the servants and confined in a hen-coop. The next morning there was a dead partridge lying close to the door of the coop. Food was brought to the same place for fourteen successive nights: this generally consisted of young partridges newly killed, but sometimes a little tainted. Once a moorfowl was brought still warm under the wings, and at another time a piece of lamb in a putrid state. M. Cronstedt sat up with his servant many nights in order to observe the deposit of the supply, if possible, but in vain. It was evident however to M. Cronstedt that the parents were the caterers, and on the look-out; for, on the very night when M. Cronstedt and his servant ceased to watch, the usual food was left near the coop. The supply continued from the time when the young owl was taken—in July—to the usual time in the month of August when these birds leave their young to their own exertions.

Belon gives an account of the use which falconers made of this bird to entrap the kite. They tied the tail of a fox to the eagle owl, and let him fly. This spectacle soon excited the attention of the kite, if he were near, and he continued to fly near the owl, not endeavouring to hurt him, but apparently intent on observing his odd figure. While so employed the falconer surprised and took the kite.



[*Bubo virginianus.*]

There are specimens in the gardens of the Zoological Society in the Regent's Park. In the museum of the Royal College of Surgeons there is a preparation (No. 1749) of the vitreous and crystalline humours of the eye of this species, showing that the vitreous humour has a distinct capsule, part of which is reflected from its outer surface; and another (No. 1755) showing the remarkable prolongation of the anterior segment of the eye, which assumes in consequence a tubular form. The horny plates of the sclerotic

are co-extensive with this segment to maintain its peculiar shape, and to afford a firm basis for the support of a very large and prominent cornea. No. 1798 shows the eye-ball, nictitating membrane and their muscles, with the external eye-lids and Harderian gland.

AMERICAN SPECIES.

Bubo Virginianus. The Virginian Horned Owl. *Strix Virginiana* of Vieillot; *Duc de Virginie* of Buffon; *Nictolus-omeaseo* of the Cree Indians, according to Mr. Hutchins; *Otowuck-cho* of the Crees of the plains of the Saskatchewan, according to Dr. Richardson.

Pennant (Arctic Zoology) says that this seems to be a variety of the eagle owl, although he notices the inferiority in size; but it is a very distinct species.

It is not improbable, as Dr. Richardson observes, that this night-bird, peculiar to America, inhabits that continent from end to end. Cuvier gives his opinion that the *Strix Magellanica* of the Planches Enluminees differs merely in having browner tints of colour; and Dr. Richardson mentions the result of Mr. Swainson's comparison of the northern specimens with those of the Table Land of Mexico, as confirmatory of the identity of the species; the only difference being a more general rufous and vivid tint of plumage in the Mexican specimens. Almost every part of the United States possesses this bird, and it is found, according to Dr. Richardson, in all the fur countries where the timber is of large size.

We have seen how the civilized Romans regarded the European bird; and it is curious to observe how, in a comparatively savage state, the same superstitious feelings were connected with the American species. 'The savages,' says Pennant, quoting "Colden's Six Indian Nations," 'have their birds of ill omen as well as the Romans. They have a most superstitious terror of the owl, which they carry so far as to be highly displeased at any one who mimics its hootings.' Lawson, evidently speaking of these birds, says 'They make a fearful hallooing in the night-time, like a man, whereby they often make strangers lose their way in the woods.' Wilson thus describes the haunts and habits of the Virginian horned owl:—'His favourite residence is in the dark solitudes of deep swamps, covered with a growth of gigantic timber; and here, as soon as the evening draws on, and mankind retire to rest, he sends forth such sounds as seem scarcely to belong to this world. . . . Along the mountain shores of the Ohio, and amidst the deep forests of Indiana, alone, and reposing in the woods, this ghostly watchman has frequently warned me of the approach of morning, and assuaged me with his singular exclamations. Sometimes sweeping down and around my fire, uttering a loud and sudden Waugh O! Waugh O! sufficient to have alarmed a whole garrison. He has other nocturnal solos, one of which very strikingly resembles the half-suppressed screams of a person suffocating or throttled.' Wilson treats this visitation like a philosopher, but, after reading his description and that of Nuttall (*Ornithology of the United States*), we shall cease to wonder at the well-told tale in 'Fauna boreali-Americana' of the winter night of agony endured by a party of Scottish Highlanders who, according to Dr. Richardson, had made their bivouac in the recesses of a North American forest, and inadvertently fed their fire with a part of an Indian tomb which had been placed in the secluded spot. The startling notes of the Virginian horned owl broke upon their ear, and they at once concluded that so unearthly a voice must be the moaning of the spirit of the departed, whose repose they supposed they had disturbed.

The following is Dr. Richardson's description of the plumage of a specimen, twenty-six inches in length from the tip of the bill to the end of the tail, killed at Fort Chepewyan:—

Bill and claws pale bluish black. Irides bright yellow. Facial circle of a deep black immediately round the orbit, composed of white mixed with black bristly feathers at the base of the bill, and posteriorly of yellowish brown wiry feathers, tipped with black, and having black shafts. The black tips form a conspicuous border to the facial circle posteriorly; but the small feathers behind the auditory opening differ little in colour and appearance from the adjoining plumage of the neck. Egrets composed of ten or twelve dark brown feathers, spotted at the base of their outer webs, and along their whole inner ones, with yellowish brown. Forehead and crown dark blackish-brown, finely

mottled with greyish white, and partially exhibiting the yellowish-brown base of the plumage. The whole dorsal plumage is yellowish-brown for more than half the length of each feather from its base, and dark liver-brown upwards, finely barred and indented with undulated white lines. More of the yellowish-brown is visible on the neck and between the shoulders than elsewhere. The primaries present six or seven bars of dark umber or liver-brown, alternating with six bars, which on the outer webs are brownish-white, finely speckled with dark-brown, and, on the inner webs, are of a bright buff-colour, sparingly speckled with the dark-brown near the shafts. The tips of the feathers have the same mottled appearance with the paler bars of the outer webs. The secondaries and tail feathers are similarly marked to the primaries, but show more white on their outer webs. There are six liver-brown bars on the tail, the last of which is nearly an inch from its end.

Under surface. Chin white, succeeded by a belt, extending from ear to ear, of liver-brown feathers, having pale yellowish-brown margins. Behind the belt there is a gorget-shaped mark of pure white. The rest of the lower surface of the body is crossed by very regular transverse bars of white, alternating with bars of equal breadth (three lines) of liver-brown, shaded with chocolate-brown. The yellowish-brown base of the plumage is likewise partially visible: there is a white mesial line on the breast, and when the long feathers covering the abdomen are turned aside, a good deal of white appears about the vent. The outside thigh feathers are yellowish-brown, with distant cross bars of liver-brown; and the legs and feet are brownish-white with brown spots. The linings of the wings are white, with bars of liver-brown, margined by yellowish-brown. The insides of the primaries are bright buff, crossed by broad bars of clove-brown. On the under surface of the secondaries the clove-brown bars are much narrower. The under tail coverts are whitish, with distant bars of liver-brown. The under surface of the tail has a slight tinge of buff-colour, and is crossed by mottled bars of clove-brown.



[*Bubo virginianus.*]

Dr. Richardson adds, that another specimen killed by Mr. Drummond on the Rocky Mountains measured two inches less in length, and differed generally from the preceding, in being of a darker hue above, with finer and less conspicuous white mottling. The yellowish-brown colour

of the base of the plumage was also less bright, and the facial circle was of a more sombre hue. Its bill, also, was more compressed.

The bird preys, according to Dr. Richardson, on the American hare, Hudson's Bay squirrel, mice, wood-grouse, &c., and builds its nest of sticks on the top of a lofty tree, hatching in March. The young, two or three in number, are generally fully fledged in June. The eggs are white.

Wilson observes that it has been known to prow! about the farm-house and carry off chickens from roost. 'A very large one,' says that author, 'wing-broken, while on a foraging excursion of this kind, was kept about the house for several days, and at length disappeared no one knew how. Almost every day after this, hens and chickens also disappeared, one by one, in an unaccountable manner, till in eight or ten days very few were left remaining. The fox, the mink, and weasel, were alternately the reputed authors of this mischief, until one morning the old lady herself rising before day to bake, in passing towards the oven surprised her late prisoner regaling himself on the body of a newly-killed hen! The thief instantly made for his hole under the house, from which the enraged woman soon dislodged him with the brush handle, and without mercy dispatched him. In this snug retreat were found the greater part of the feathers, and many large fragments of her whole family of chickens.'

There are specimens in the gardens of the Zoological Society in the Regent's Park.

We cannot close this article without referring to the beautiful figure and interesting description of *Bubo Arcticus* in 'Fauna Boreali-Americana.' It is not at all improbable that this may be the *Strix Scandiaca* of Linnæus. Of the Pennant, in his 'Arctic Zoology,' says that Linnæus seems to take his description from a painting of Rudbeck's, adding, 'its existence is confirmed by Mr. Tonning of Drontheim:' but Temminck considered this Scandinavian eared owl to be merely a snowy owl, on which two scintillant egrets had been placed.

The specimen of *Bubo Arcticus* described by Dr. Richardson was observed flying at mid-day in the immediate vicinity of Carlton House, and was brought down with an arrow by an Indian boy.

RUBON. [GALBANUM.]

BUCCANEERS, a most numerous and well-known association of sea-robbers or pirates, who were also called 'The Brethren of the Coast,' and still more commonly 'Flibustiers.' The term Buccaneer is of curious derivation. The Caribbee Indians taught the colonists in the West Indies a singular mode of curing and preserving the flesh of cattle: when cured, this flesh was called *Boucan* by the Caribbees: from *boucan* the French made the verb *buccaner*, which the 'Dictionnaire de Trevoux' explains to be 'to dry red, without salt.' Hence comes the noun *Boucanier*, and our Buccaneer.

The term Flibustier is supposed to be nothing but the French sailors' corruption of our word 'freebooter'; and it is a curious fact, that as we always used a word corrupted from them, so the French designated the robbers by a word derived from us, invariably calling them *flibustiers*, or freebooters.

The Buccaneers were natives of different parts of Europe, but chiefly of Great Britain and France. They were men of them seafaring people, and the origin of the association about the year 1524 was entirely owing to the jealousy of the Spaniards, who would not allow any other nation to trade or settle in the West Indies, and who pursued the English or French like wild beasts, murdering them wherever they found them. At that time and long afterwards, Spain, in right of her priority of discovery, and of the well-known bull of Pope Alexander VI., considered the whole of the New World as treasure-trove of which she was lawfully and exclusively the mistress. Every foreigner found among the islands or on the coasts of the vast American continent was treated as a smuggler and robber, and this being the case it is no wonder that seafaring adventurers soon became so, and returned cruelty by cruelty. As early as 1517, when an English ship appeared at St. Domingo to request liberty to trade, the Spaniards fired their cannon at her and drove her away. When this unexpected visit was reported to the Spanish government at home, the minister sent out a sharp reprimand to the governor of St. Domingo because he had not artfully seized the ship instead of driving her away, and so disposed of the English that no one of

them should have returned to teach others of their nation the route to the Spanish Indies. But the enterprising nations of Europe were not to be checked by the tyranny of Spain, nor could a papal bull shut the eyes of navigators and make them blind to the improving science of navigation, or to their way across the ocean. The mariners of Europe, moreover, still considered the New World as an Eldorado where gold and treasures were to be had for the fetching, and this made them brave the monstrous cruelties of the Spaniards. In 1526 one Thomas Tyson was sent to the West Indies as factor to some English merchants, and many adventurers soon followed him. The French began to make voyages to Brazil, and the Portuguese and the Dutch successively began to show themselves in numbers in the West Indies. Knowing what they had to expect they were always prepared to fight desperately. From an ingenious phrase, '*se didommager d'avance*,' used by one of the French filibusters, it appears they did not always wait to be attacked, but in case of a favourable opportunity became themselves the assailants. To repress these interlopers the Spaniards employed *guarda-costas*, the commanders of which were instructed to massacre all their prisoners. This tended to produce a close alliance, offensive and defensive, among the mariners of all other nations, who in their turn made descents on the coasts, and ravaged the weaker Spanish towns and settlements. A permanent state of hostilities was thus established in the West Indies entirely independent of peace or war at home. 'The Brethren of the coast' cared not if their respective native countries in the Old World were at peace with Spain; in the New they must of necessity fight the Spaniards or die, or relinquish the benefits which that immense region offered. When not engaged in traffic with the Indians or in predatory excursions against the Spaniards, the principal occupation of these men was hunting wild cattle, of which they made their *boucan*, but they did not begin the latter occupation until several years after their first appearance in the Caribbean seas. At a still later date many of them became logwood cutters in the bay of Campeachy, and as both these occupations soon became very profitable, and trading ships from Europe began to resort to them in numbers for their hides, suet, dried meat, wood, &c., there is good reason for supposing that if the Spaniards had left them in peace they would gradually have settled down into quiet industrious communities. But instead of this, the Spaniards continued to murder them whenever they could surprise them, to burn their log-huts, to hunt them from place to place, and even to kill the shipwrecked mariners who were thrown by misfortune upon their coasts. The effect of all this was, that the buccaneers became as sanguinary as their enemies, increased their numbers, condensed their operations, and soon considered everything Spanish as fair prize, and every Spaniard's life a forfeit to them. Some home-returning filibusters brought accounts of the barbarities of the Spaniards into Europe, where they soon got into print, were circulated as popular stories, and produced an immense sensation. A Frenchman of the name of Montbars on reading one of these stories conceived such a deadly hatred of the Spaniards that he became a buccaneer, and killed so many of that nation in the West Indies that he obtained the title of 'The Exterminator.' Other men joined the brethren of the coast from less ferocious motives. Raveneau de Lussan took up the trade of buccaneering and obbing because he was in debt, and wished, as every *honest man* should do, to have wherewithal to pay his creditors. By degrees many men of respectable birth joined the associations, on which it was customary for them to drop their family name and assume a new one. Some of the buccaneers were of a religious temperament. A French captain, named Daniel, shot one of his crew in church for behaving irreverently during the celebration of mass. Captain Richard Sawkins, an Englishman, threw the dice overboard on finding them in use on the Sunday; and the first thing Captain John Watling did was to order his obbers to keep holy the Sabbath.

In 1625 the English and French conjointly took possession of the island of St. Christopher, and five years later of Tortuga, which islands became the head-quarters of the buccaneers, who, whenever the countries of which they were natives were at war with Spain, obtained commissions or letters of mark from Europe, and acted as regular privateers in the West Indies and on the Spanish Main. This latter custom gave a colour of legitimacy and honour to their

calling, and confounded the notions of right and wrong in their ignorant minds. The governors of the first English colonies in the West Indies, or at least the majority of them, were great rogues, and on condition of sharing spoils with the buccaneers they let them do pretty much as they chose, even when there was no war with Spain.

In 1638 the Spaniards in force surprised Tortuga, while most of the adventurers were absent in Hispaniola hunting cattle, and they massacred all the English and French buccaneers that fell into their hands. The buccaneers however soon retook the island, and made it the centre of their hunting and cruising as before. These singular associations were held together by a very simple code of laws. It is said that every member of it had his chosen and declared chum or comrade, between whom and himself property was held in common while they lived together, and when either of the two died the survivor succeeded to whatever he possessed; but as buccaneers were known at times to bequeath property by will to their friends in Europe, this cannot have been a compulsory regulation. What, however, was insisted upon by their corporate laws was, that there should be a general participation in certain essentials, among which were enumerated meat for present consumption and other necessaries of life. It has been said that bolts, locks, and all kinds of fastenings were prohibited among them, as implying a doubt of 'the honour of their vocation.'

In addition to the names already mentioned, Peter of Dieppe, called 'Peter the Great,' Bartolomeo Portuguese, François L'Olonnais, and Mansvelt were distinguished captains of buccaneers, who made themselves terrible in those seas. But the fame of all these men was eclipsed by Henry Morgan, a Welshman, who succeeded Mansvelt in a sort of general command. He took and plundered the town of Puerto del Principe in Cuba, attacked Puerto Bello, one of the best fortified places in that part of the world, and took and sacked Maracaibo and Gibraltar. Morgan displayed not only infinite bravery, but the highest qualities of a great commander; unhappily however, like most of his predecessors, he was treacherous, cruel, and blood-thirsty. He was in the habit of torturing his prisoners in order to make them confess where they had concealed their treasures. The boldest and most astonishing of all Henry Morgan's exploits was his forcing his way across the isthmus of Darien from the Atlantic to the Pacific ocean. His object was merely to plunder the rich city of Panama, but his expedition opened the way to the great southern seas, where the buccaneers soon achieved strange exploits, and laid the foundation of much of our geographical knowledge of that ocean. In December, 1670, thirty-seven vessels, having on board about 2000 men, rendezvoused at Cape Tiburon under the enterprising Welshman, whom French and English obeyed with equal alacrity. On the 16th of Dec. he took the island of Santa Catalina, where he left a strong garrison. He next took the strong castle of San Lorenzo, at the mouth of the river Chagre, on the east side of the isthmus of Darien, where out of 314 Spaniards he put 200 to death. He left 500 men in the castle, 150 to take care of his ships, and with the rest, who, after deducting the killed and wounded, amounted to about 1200 men, he began his land march through one of the wildest and most difficult countries, which was then only known to the wild Indians. The fatigues and difficulties they suffered on this march were dreadful. On the tenth day after his departure from San Lorenzo, Morgan, after a desperate combat with the Spaniards, who had 2000 foot and 400 horse, took and plundered the rich city of Panama, which then counted about 7000 houses. Here again his cruelties were innumerable. He returned in safety, and loaded with wealth, to San Lorenzo, where he found all his ships undisturbed. Having tricked most of the fleet out of their share of the spoils, he sailed for Jamaica, which was already an English colony. This dexterous ruffian was afterwards knighted by Charles II., and became successively commissioner of the admiralty court in Jamaica, and deputy governor of that island.

In 1673 the Spaniards murdered 300 French filibusters, who had been shipwrecked at Puerto Rico—a barbarous act which provoked atrocious reprisals.

The short way to the South Seas had been shown by Morgan, and, in 1680, about 330 English buccaneers started from the shores of the Atlantic to cross the Isthmus. The route they pursued varied slightly from that followed by

Morgan; but they had men with them more capable of describing what they saw. These were Basil Ringrove, Barty Sharp, William Dampier, and Lionel Wafer, each of whom, in after years, wrote and published an account of his adventures, with a description of the country. Although they formed an alliance with the Darien Indians, who hated the Spaniards, this expedition was not in sufficient force to attack Panama. Two hundred of them, however, having procured a number of small Indian canoes, launched into the bay of Panama, attacked three large armed ships, took two of them, and began cruising in them. These fellows had even some diplomatic skill. Ringrove tells us that the governor of Panama sent to demand of Sawkins their captain, 'Why, during a time of peace between England and Spain, Englishmen should come into those seas to commit injury? and from whom they received their commission?' Sawkins replied, 'That he and his companions came to assist their friend the king of Darien, who was the rightful lord of Panama, and all the country thereabouts.'

The adventurers then proceeded to capture ships and plunder the towns along the coast, and some of them remained a long time in the South Seas, and made many discoveries.

In 1684 another expedition, in which also the skilful seaman Dampier and the surgeon Wafer were engaged, sailed from Virginia, and, stretching along the whole of South America, doubled Cape Horn and entered the South Seas to plunder the Spaniards. Many of these hardy adventurers explored the Pacific, from the coasts of Chili, Peru, Mexico, and California, to the shores of China, Malacca, and India; and we scarcely know any thing of the sort so interesting as Dampier's narrative of this expedition. [DAMPIER.]

In 1670 a solemn treaty of peace, known in diplomacy by the name of the 'Treaty of America,' which provided for the entire suppression of the buccaneer warfare, was concluded between Great Britain and Spain; but, as far as the buccaneers were concerned, this was a bit of waste paper, for by far the most daring of their achievements took place after the date of the treaty.

The war between Great Britain and France, which followed the accession of William III., in 1688, did much more to relieve the Spaniards from the scourge. The French, without waiting for a declaration of war, attacked the English in the West Indies, where, for some time, the chief belligerents were those ancient allies and comrades, the filibusters of one nation and the buccaneers of the other, who were now called privateers, and duly commissioned. The bonds of animity were broken; they exercised upon each other some of the cruelties they had exercised in common upon the Spaniards, and they never again confederated in any buccaneer cause. At one time, had they been properly headed, and had conquest, not plunder, been their object, they might, by degrees, have obtained possession of a fair portion of the West Indies—they might at once have established an independent state among the islands of the Pacific. Henry Morgan, in fact, at one time entertained this magnificent idea.

The treaty of Ryswick, in 1697, and four years later the accession of a French Bourbon prince to the throne of Spain, brought about the final suppression of the buccaneers. Many of them turned planters or negro drivers, or followed their calling as sailors on board of quiet merchant vessels; but others, who had clippers, or good sailing ships, quitted the West Indies, and went cruising to different parts of the world. For nearly two centuries their distinctive character or function had been the constant waging of war against the Spaniards, and against them alone, and now this was lost for ever.

'After the suppression of the buccaneers,' says Captain Burnet, 'and partly from their relics, arose a race of pirates of a more desperate cast, so rendered by the increased danger of their occupation, who for a number of years preyed upon the commerce of all nations, till they were hunted down, and, it may be said, exterminated.' Within the few last years, however, many dreadful piracies have been committed in the Mexican Gulf.

(*History of the Buccaneers of America*, by James Burney, F.R.S.; *Lives of Banditti and Robbers*, by C. Mac Farlane; *The Buccaneers of America*, by an old anonymous author; *Dampier's Voyages*; *Lionel Wafer's*, *Basil Ringrove's* and *Barty Sharp's Narratives*; and, in French, the works of Père Charlevoix.)

BUCCINA, a military instrument of the shrill horn, or cornet, kind, in use among the antients, and by some

supposed to have been formed of the horn of the bull or goat. According to others it was the shell of the buccinum, a fish. Vegetius (*De Re Militari*) says that it was made of brass, and bent in a circle. Blanchinus (*De Instrum. Vet.*) also states that it was a metallic instrument; but from the engraving he gives of it, after ancient bas-reliefs, &c., the buccina would appear to have been perfectly straight. Sir John Hawkins coincides in opinion with Blanchinus, and copies the form of the instrument from a plate given in the work of the learned Italian. The probability is, that the buccina in its primitive state was a simple horn, and that subsequently it was formed of a more durable material.

BUCCINUM. [ENTOMOSTOMATA.]

BUCCO. [BARBETS.]

BUCENTAUR (IL BUCENTO'RO), the state-galley of the republic of Venice, for the name of which many very unsatisfactory derivations have been proposed. We do not recollect ever to have seen mentioned the legitimate Bucentaur, i. e., the compound of the bull and the horse, with which Hercules, on many ancient monuments, is represented to be fighting; but one authority traces it to the augmentative particle *Boū* (*Bou* or *Bu*), and *centaurus*, a name appropriated to any thing of large size, and especially to a ship. Another supposes it to be *Bis Taurus*, and asserts that the galley of Æneas was so called; but we know not how this fact is ascertained. Lastly, it has been said to be a corruption of *Ducentorum*, but to what this word is to be applied as an epithet is much doubted; whether *Navium*, according to the law which ordered its original construction by the shipwrights; or *remorum*, the number of oars by which it is not rowed; or, as the *Cronaca Veneta* says, without any explanation (which therefore it might be hazardous to supply), because it is *Biscentium hominum cursus*.

The most elaborate description of this gorgeous vessel with which we are acquainted is that given in the second volume of the work to which we have last referred. But we doubt not that the reader will gladly be spared a minute account of the carving and gilding with which it was adorned, and a detail of the marine deities, the sirens, the masks of the fruit, the flowers, the shell-work, the medallions, the cornucopias, the allegorical groups, the winged lions, the birds, the zodiacs, the canopies, the virtues, and the liberal arts, which were profusely scattered over it on one of its latest repairs by the skill and taste of 'Giovanni Adami Doratore Veneto.'

It may be sufficient to state that it as much exceeded Lord Mayor's barge in costliness as it did in dimensions. It was 100 ft. by 21 in extreme length and breadth; the rowers, 4 to each oar, were allotted to it from the army, and were disposed in a lower deck; besides these it was manned by a crew of 40 mariners. The upper deck was covered with an awning (*tiemo*) of crimson velvet, beneath which were seated the doge and his goodly company. The doge himself was enthroned near the stern, surrounded by foreign ambassadors, and the senators and great officers of state were disposed on seats running in four rows along the length of the vessel.

The date of the original Bucentaur is not very clearly ascertained; but, like the famous ship at Athens, although in perpetual flux, the galley of the moment, according to Howell, was ever reputed 'to be the self-same vessel, however often put upon the careen and trimmed.' We believe there is not a foot of that timber remaining which it had upon the first dock, having been, as they tell me, often planked, ribbed, caulked, and pieced.' Its use on the feast of Ascension is traced to a victory obtained in the year 1177 by the Doge Sebastiano Ziani over the Emperor Frederick Barbarossa. The Venetians had espoused the cause of Pope Alexander III., who had taken refuge in the *Lido* gulf. The doge, with a fleet not mustering half the number of vessels which Pisa, Genoa, and Ancona had put under the command of the emperor's son Otho, encountered them off the coast of Istria. After a battle which lasted more than six hours, Otho, with 48 out of his 65 galleys, was taken prisoner, two of his ships having been destroyed. The pope received the conquerors on the *Lido*, and presenting Ziani with a golden ring addressed him in these words: 'Take this ring, and with it take, on my authority, the emperor as your subject. Every year, on the return of this happy day, you and your successors shall make known to the emperor that the right of conquest has subjugated the Adriatic to Venice as a spouse to her husband.' The Venetians themselves have sometimes claimed an earlier authority.

this lordship of the Adriatic; and Foscarini (*Della Letteratura Venesiana*, lib. ii. p. 216) finds some trace of it in Dandolo's Chronicle towards the close of the 10th century. It was not likely that the Vatican should demur as to the claim established by the grant of Alexander III. when it recolected the answer which the Venetian ambassador Donati returned to Julius II. when that pope inquired where the grant of Alexander was to be found. He was requested to look for it on the back of the donation of Constantine.

The Bucentaur having been conducted, on the eve of the feast of Ascension, from the arsenal to the piazza, received its splendid passengers. Accompanied by innumerable feluccas and gondolas it passed on to the mouth of the Lido amid the thunder of artillery. On coming in front of the chapel of the arsenal, the rowers, in maritime fashion, saluted an image of the Virgin, and in the meantime the patriarch of Santa Helena, on which island is a convent, awaiting the pomp, was entertained by the monks with a repast of chestnuts and water (*una veramente religiosa, vera colazione*). As soon as the doge appeared in sight, the patriarch embarked with his clerical suite in a small gilded barge (*peatone*) in order to meet the procession, and during his passage he blessed the remainder of the water, which was afterwards thrown into the sea. On issuing from the port of Lido, near the mouth of the harbour, the doge dropped a ring into the bosom of the Adriatic, betrothing her by these words, 'We wed thee with this ring in token of our rue and perpetual sovereignty.' He then returned to the church of San Nicolo di Lido, and having heard a solemn pontifical mass, re-embarked in the Bucentaur and entertained his cortège with a magnificent banquet in the palace.

Since the occupation of Venice by the French, the Bucentaur has been allowed to rot in the arsenal. Casaubon (*in Ithenœum*, xi. 2), who has been followed by Darù, notices the Venetian custom as reminding him of an offering made to the sea by the Syracusans of an earthen vessel filled with oney, flowers, and frankincense.

BUCER, MARTIN, was born in 1491, at Schelestadt, near Strasburg, a town of Alsace, in the modern French department of the Lower Rhine. His real name was Kuhnorn (Coworn), which, according to the pedantic fashion of his times, he changed into a Greek synonym, calling himself Bucer. Having entered the order of Saint Dominick, he received his education at Heidelberg. Some tracts by Erasmus and others, and, yet more, some by Luther which fell in his way, induced him to adopt the opinions of the latter in 1521. About eleven years afterwards, he appears to have preferred the profession of Zuinglius, but he was ever a strenuous promoter of union between the different sects of the Reformed, according to whose doctrine he taught divinity for twenty years at Strasburg. At the diet of Augsburg, in 1548, he vehemently opposed the system of doctrine called the *Interim*, which the Emperor Charles V. had drawn up for the temporary regulation of religious faith in Germany until a free general council could be held. On the insidious nature of that proposition we need not here dwell; and it may be sufficient to state, that although it was expressed for the most part in scriptural phrases, it favoured almost every equally by the Romanists and by the Reformed; but the Emperor urged its acceptance so fiercely, that Bucer, after having been subjected to much difficulty and danger, accepted an invitation from Cranmer to fix his residence in England. Bucer had denounced the *Interim* as 'nothing but downright Popery, only a little disguised,' and about the same time he wrote a book against Gardiner, chiefly relating to the celibacy of the clergy.

On his arrival in England, he was appointed to teach theology at Cambridge, and appears to have been much admired and respected. When Hooper accepted the shoprick of Gloucester, but refused to be consecrated in the episcopal vestments, Bucer wrote a most convincing but moderate treatise against this fastidious reluctance; and on the review of the Common Prayer Book, he expressed his opinions at large, that he found all things in the service and daily prayers clearly accordant to the Scriptures. He wished for a stricter discipline to exclude scandalous livers from the Lord's Supper. He objected to that communion which urged the people to receive it at least once a year (a practice still retained by the Presbyterians), and would have them pressed to it much more frequently. He censured the bread to be placed in the hands, not put into the mouths, of the communicants; and he thought the

prayer that these elements might become the body and blood of Christ favoured transubstantiation too much, and might, by a slight change, be brought nearer the words of Scripture. He condemned the administration of baptism in private houses, and he recommended frequent catechizing. It will be remarked that all these amendments have since either been adopted, or are such as the real friends of the Church of England approve.

The king having heard that Bucer's health had suffered during the winter from the want of a German stove, sent him 20*l.* to procure one. In return, he wrote a book for Edward's own use, 'Concerning the Kingdom of Christ,' which he presented as a new year's gift. It referred the miseries of Germany to the want of ecclesiastical discipline, the adoption of which he strongly recommended in England, beginning by a more careful refusal of the eucharist to ill livers, by the sanctification of the Lord's day, of holidays, and of days of fasting, which last he proposed should be more numerous and less confined to Lent, a season which had been popularly disregarded; and by the reduction of non-residence and pluralities, the true remnants of Popery.

Bucer died at Cambridge in the close of February, 1550, and he was buried in St. Mary's with great honour, his remains being attended by full 3000 persons jointly from the university and the town. A Latin speech was made over his grave by Dr. Haddon, the public orator, and an English sermon was then preached by Parker, afterwards archbishop of Canterbury, to whom, not long before his death, he had applied in a very pathetic and urgent letter for the loan of ten crowns for a month; and on the following day, Dr. Redman, master of Trinity College, preached at St. Mary's a sermon in his commendation. Redman had differed from him much, especially on justification and divine grace, so that Strype ranks him among 'his enemies;' but in his sermon he particularly praised the sweetness of his temper, and added, that as Bucer 'had satisfied him in some things, so he believed, if he had lived, he would have satisfied him in more; and that he being dead, he knew none alive from whom he could learn so much.'

An amusing story, recorded in the Life of Bishop Jewell, shows both the gentleness of Bucer's disposition and the malice of his opponents. Catherine duchess of Suffolk having two sons at Cambridge, and herself occasionally residing within its precincts, had sent Bucer a cow and a calf towards the maintenance of his family. The good-natured man was fond of these beasts, and often visited them in their pasture, an innocent recreation, which gave occasion to a report among his adversaries that the cow and calf were magic spirits which instructed him in what he was to read in the schools. On hearing this rumour, he by no means gave up his customary attention to his favourites, but once pointing them out to a friend, he observed with a jesting tone, 'Behold, these are my masters, from whom I have learned what I teach others; and yet they can speak neither Latin nor Greek, Hebrew nor German, nor talk to me in any other language.'

During the reign of Mary, five years afterwards when inquisitors were sent to Cambridge, the corpses of Bucer and of Fagius were dug up from their resting-places, fastened erect by a chain to stakes in the market-place, and disgustingly burned to ashes; their names, at the same time, were erased from all public acts and registers as heretics and deniers of the true faith; and this violence to their memories continued till Elizabeth became queen. A very interesting collection of tracts relative to the life, death, burial, condemnation, exhumation, burning, and restoration of Martin Bucer, was published at Strasburg, in Latin, by his friend Conrad Hubert. It contains, among other matters, the Greek and Latin *Epicedia* which the members of the university, according to custom, placed on his coffin; and also the *Encomia*, written when he and Fagius were posthumously reinstated in their academical honours. Each of these testimonies of honour fills more than fifty pages.

Bucer wrote both in Latin and in German, and so largely that it is thought his works, if collected, would amount to eight or nine folio volumes. He was thrice married, and his first wife, by whom he had thirteen children, was a nun, perhaps selected by him, not very judiciously, in imitation of Martin Luther. It is by no means easy to decide respecting the terms on which he lived with that great reformer, but it seems, from an anecdote which Scultet has preserved (*Annal. ad ann. 1529*), that Luther treated him

with either unmannerly rudeness or with a bluff familiarity which no intimacy could be close enough to justify. On one occasion, when Bucer and (Ecolampadius paid him a visit, he conversed in a civil and friendly manner with the latter, and when the former addressed him, he replied with a sort of smile (*subridens aliquantulum*), 'You are a rogue and a knave' (*Tu es nequam et nebulo*). Jortin, from whom we derive the story (*Life of Erasmus*, i. 390), understands the expressions in an evil sense, and says that Luther could not 'endure' Bucer. But the words are equivocal: *subridens* means *chuckling* as well as *sneering*, and is the term chosen by Virgil when he represents Jupiter goodhumouredly attempting to soothe and fondle Venus. The speech itself must be interpreted according to the playful or serious tone in which it was pronounced, and to this we have no guide. The Romanists hated Bucer as a powerful opponent; they abused him for extreme subtlety, and they seldom spoke of him otherwise than as a 'sly fox.'

BU CEROS. [HORNBILL.]

BUCH, a district of the Bordelois, in France, extending along the coast of the Bay of Biscay. Its capital was La Teste or Tête de Buch (now generally known by the simpler designation of La Teste), at the head of the Basin of Archachon. Pop. in 1832, 2595 for the town; 2840 for the whole commune. This district is now included in the dep. of Gironde. Its first lords bore the title of Captal, and their lordship gave to them several rights and privileges in the city of Bordeaux. From these first lords the capitulate passed successively to the houses of Grailly, Nogaret-Epernon, Foix-Randan, and Gontaut. A Captal de Buch, of the house of Grailly, distinguished himself in the wars in France in the fourteenth century; he served in the armies of Edward the Black Prince, duke of Guienne, and of Charles le Mauvais, king of Navarre.

BUCHAN, a district of Aberdeenshire, Scotland, which extends along the coast about 50 m. from the mouth of the Ythan to the boundaries of Banffshire. The shore is bold and rocky; the interior generally level; and although agriculture is rapidly improving it, the extent of the waste lands and the comparative absence of trees give a bleak and barren appearance to the district. The hill of Mormond near Strichen is its principal elevation, which by a figure of a white horse formed by paving white stones on its side has become conspicuous at a distance and a good sea-mark. The Ythan (the riv. which divides Buchan from Formartin) after a course of about 22 m. falls into the sea at Newburgh; it was noted in former times for its pearl-fishery, and the most valuable pearl of the royal crown of Scotland is said to have been got out of it. The Ugie falls into the sea a mile N. of Peterhead. On the sea coast a few miles S. of Peterhead are the Bullers of Buchan, a nearly round basin about 30 yards wide, formed in a hollow rock which projects into the sea, towards which there is an arch by which the waves enter. It is open also at the top, round which there is a narrow path about 30 yards from the water: when the sea is high in a storm this scene is exceedingly grand.

The climate of Buchan, like that of the rest of Aberdeenshire, is proverbially keen; but Professor Playfair of St. Andrew's, in his description of Scotland, describes it as mild, and affirms from experience that when snow is one foot deep at Aberdeen it is two at Newcastle-upon-Tyne. The winters, he says, are less severe and the summer less warm than in the southern counties, but easterly winds, fogs, and rain make the spring late and the autumn stormy.

On a peninsular rock of the coast stands Slains Castle, a ruin, once the residence of the earl of Errol, about 16 m. N. of Aberdeen. It was demolished by James VI. in 1594. Near it is the dropping cave or white cave of Slains, which is remarkable for its stalactites. On the first Monday of every month small debt courts are held alternately at Old Deer and Rathen in this district; the average of the cases decided for five years before 1821 was 53 a month.

BUCHANAN, GEORGE, was born of poor parents, in the parish of Killearn, and county of Stirling, about the beginning of February, 1506. He was the third of eight children, who, by the death of their father, and the insolvency of their grandfather, were early thrown upon the care of their widowed mother, and the friendship of more distant relations. By one of these, James Heriot, his maternal uncle, Buchanan was sent at the age of fourteen to the university of Paris; where, however, he had not been two years when his uncle dying, he was left in a state of such destitution that in order to get to his native country

he was forced to join the corps then being raised as auxiliaries to the Duke of Albany in Scotland. After a twelve-month spent at home in the recovery of his impaired health, he again joined the troop of French auxiliaries, and proceeded with them to the siege of Werk; but the hardships which he suffered on this occasion reduced his youthful frame to its former state of debility, and he was confined to his bed the remainder of the winter.

In the ensuing spring, he and Patrick, his eldest brother, were entered students in the *pedagogium*, afterwards St. Mary's College, of the university of St. Andrew's. It is said to have been by the bounty of John Major, who then taught the logic class in St. Salvator's college, that the two brothers were maintained at this time. This is not unlikely. Buchanan was an exhibitor when he passed bachelor of arts, on 3rd Oct., 1525; and we learn from himself, that when Major went the following summer to France, he went thither also, and became a student in the Scots' college at Paris, where, as he had obtained the degree of B.A. at St. Andrew's, he was immediately incorporated of the same degree. This was on the 10th of Oct., 1527. The next year he proceeded M.A.; and the year following he was chosen procurator of the German nation—a division of the students which comprehended those from Scotland. After a struggle of two years with 'the iniquity of fortune,' as he expresses it, he obtained the situation of a regent or professor, in the college of St. Barbe, where he taught grammar nearly three years. He then resigned the chair, which had yielded him but a miserable pittance, and became tutor to Gilbert, Earl of Cassilis, a young Scots nobleman, who resided at that time in the neighbourhood of the college, his previous tutor, William, abbot of Crossraguel, having left him to do his pilgrimage to Rome under a royal licence granted to that effect of date 8th April, 1531. (Pitcairn's *Crim. Trials*, vol. i. p. 245). With that nobleman Buchanan remained abroad about five years, and in this period committed to the press his first publication, which was a Latin translation of Linacre's *Rudiments of Latin Grammar*. In May, 1537, he came to Scotland in company with Lord Cassilis, who had just attained his majority; and, probably by his influence, was then appointed tutor to James Stewart, one of the natural children of James V., with a liberal allowance.*

At Lord Cassilis's seat, where he seems to have continued a visiter, he composed his poem entitled 'Somnium,' a derision of the regular clergy. The king, who had a turn that way, having seen the poem, solicited him to write some more satires of a like kind. He did so accordingly, and published among others his 'Palinodia,' and 'Franciscanus.' These pieces brought upon his devoted head the vengeance of the church. He was seized as a heretic, and thrown into prison; and Cardinal Beaton actually tendered to the king a sum of money to consent to his immediate death. The avaricious James might have rejected this bribe; but Buchanan happily escaped from his confinement and got to England, where, after a severe struggle with want and the dread of re-imprisonment, he resolved on returning to Paris. Finding on his arrival that Cardinal Beaton was living there at that time, he gladly accepted an invitation from Andrew Govea, to become a regent or professor of Latin in the college of Guienne at Bordeaux. It appears that he was at Bordeaux before the close of the year 1539, for on the 1st of Dec. of that year he presented a poem in the name of the college to Charles V., when he made his solemn entry that day into Bordeaux. He remained here three years, during which he published his Latin tragedy 'Baptistes,' and several other minor pieces; but being continually harassed by the clergy under letters from Cardinal Beaton, who had traced his retreat, he removed to Paris, and from the year 1544 till about 1547 taught Latin in the college of the Cardinal de la Moine, along with the learned philologist Turnebus and Muretus. In 1547 Govea was invited to become principal of the university of Coimbra in Portugal, and to bring with him learned men to fill the vacant chairs. Buchanan accompanied him on that occasion, and became a regent in the university; but having the misfortune to lose his friend Govea by death the following year, the inquisition assailed him as a heretic, and after harassing him for near a year and a half, shut him up in the cell of a monastery. But nothing could confine or subdue the mind.

* On the 21st of Aug. 1537, he received from the king 90*l.*, and the sum in July, 1538; at which latter date he also received a rich black robe and cassock, on occasion of Queen Mary of Guise's public entry into Edinburgh. (*Treasurer's Accounts*, ap. Pitcairn's *Crim. Trials*.)

of Buchanan. It was in this solitary abode he began his well-known 'Version of the Psalms.' Being at last restored to liberty, he embarked for England in a vessel then leaving the port of Lisbon; but the political state of that country bearing an unfavourable aspect, he soon quitted it again for France, which he reached about the beginning of the year 1553. The siege of Metz was raised about the same time; and at the earnest request of some of his friends he commemorated that event in a Latin poem. He was soon afterwards appointed a regent in the college of Boncourt; but in the year 1555 he gave up that charge for the place of domestic tutor to Timoleon de Cossé, son of the celebrated Maréchal de Brissac. During his connexion with this family, which lasted till the year 1560, he published several poetical works, among which was his translation of the *Alcestis* of Euripides, and the earliest specimen of his paraphrase of the Psalms. In 1560 he returned to Scotland, where we find him in the beginning of the year 1562 classical tutor to the young queen Mary. For his services in that capacity she gave him a pension of 500*l.* Scots a-year for life out of the temporalities of the abbey of Crossragwell; and in the year 1566 the Earl of Murray, her brother, to whom he had dedicated a new edition of his '*Franciscanus*,' presented him with the place of principal of St. Leonard's College at St. Andrew's. The following year he was chosen Moderator of the General Assembly of the church of Scotland, which was a still more extraordinary homage to his character and various abilities.

In 1570 he resigned the office of principal of St. Salvador's college, on being appointed one of the preceptors to the young King James, then in the fourth year of his age. The same year the place of Director of the Chancery was for his services conferred upon him, and soon afterwards that of Lord Privy Seal. This latter was a highly honourable and lucrative office, and entitled its holder to a seat in parliament. He retained it till at least 1578, when he nominally resigned it in favour of his nephew, Thomas Buchanan, of Ibbert. In the same year, 1578, he was joined in several parliamentary commissions, legal and ecclesiastical; and particularly in a commission issued to visit and reform the universities and colleges of the kingdom. The scheme of reformation suggested, and afterwards approved of by parliament, was drawn up by him. The same year also he brought forth his celebrated treatise '*De Jure Regni apud Scotos*.'

Continued indisposition and the advance of age now warned him of his approaching dissolution. In his 74th year he wrote a brief memoir of his own life; when visited a few days before his death by some friends, he was found sitting in his chair teaching the boy that served him in his chamber the elements of the English language and grammar; and not long afterwards he expired, while his great work his '*History of Scotland*' was passing through the press. He died at Edinburgh on the 28th of Sept., 1582, and was buried at the cost of the town, having by his many charities and benefactions left himself without means to defray the necessary charges of his burial.

As a man of great and various learning, and of nearly universal talent, he was without a rival in his own day; and he is one of the most elegant Latin writers that modern times have produced. If we may judge from his Latin verse translations of the *Medea* and *Alcestis* of Euripides, he must also have been a good Greek scholar. He deserves to be cited as a remarkable instance of the love and pursuit of knowledge in the most unfavourable circumstances, amidst poverty and disease, religious persecution and civil discord.

There are two collective editions of the works of Buchanan. One is by Ruddiman, published at Edinburgh in 1715 in two vols. folio. The other is by Peter Burman, Lug. Bat. 1725, in two vols. 4to. In this the editor has, besides his own critical annotations, incorporated the notes, dissertations, &c. of his predecessor.

BUCHANAN, REV. CLAUDIUS, D.D., vice-provost of the college of Fort William, in Bengal, and well known for his exertions in promoting an ecclesiastical establishment in India, and for his active support of missionary and philanthropic labours, was born on the 12th of March, 1766, at Cumbusmag, a village near Glasgow. When a young man of the age of twenty-one, he made his way to London almost friendless and unprotected, where he succeeded in attracting the attention of the Rev. Mr. Newton, the well-known rector of St. Mary's Woolnoth. By Mr. Newton's

influence, he was sent to Cambridge, where he was educated at the expense of Henry Thornton, Esq., whom he afterwards repaid.

He went out to India in 1796 as one of the East India Company's chaplains; and on the institution of the college of Fort William in Bengal, in 1800, was made professor of the Greek, Latin, and English classics, and vice-provost. His residence in India was distinguished by the publication of his '*Christian Researches in Asia*,' a book which attracted considerable attention at the time, and which has gone through a number of editions. In the years 1804 and 1805 he gave various sums of money to the universities of England and Scotland, to be awarded as prizes for essays on the diffusion of Christianity in India. One of the productions which the occasion called out was a poem on '*The Restoration of Learning in the East*,' by Mr. Charles Grant, now Lord Glenelg, at present (1836) Secretary of State for the Colonies.

He returned to England in 1808, and during the remainder of his life continued, through the medium of the pulpit and the press, to enforce his views. His reply to the statements of Charles Buller, Esq., M.P., on the worship of the idol Juggernaut, which was addressed to the East India Company, was laid on the table of the House of Commons in 1813, and printed. He died at Broxbourne, Herts, February 9, 1815, being, at the period of his death, engaged in superintending an edition of the Scriptures for the use of the Syrian Christians who inhabit the coast of Malabar.

(*Life and Writings*, by Rev. Hugh Pearson.)

BUCHA'RIA. [BOKHARA.]

BUCHA'RIA, LITTLE, or Eastern Toorkistan, was a name till lately in use and employed to indicate the most western portion of the countries dependent on the Chinese empire. It now begins to be known under the Chinese name of Turfan, or rather Thian-Shan-Nanlu. In the latter article a description of it is given.

BUCHOREST, but more correctly **BUKARESHT**, 'the city of enjoyment,' in the eastern part of Wallachia, is agreeably situated in a rich and spacious plain, diversified by hills, and on the E. bank of the Dumbovitz. In extent it is about 4 m. from N. to S., and nearly 3 m. from E. to W. It is the residence of the prince and divan or council of Wallachia, the seat of government, as well as of a Greek archbishop, and the head-quarters of the foreign envoys or consuls. Independently of its agreeable situation, Bucharest has no claim to its designation; for it is, with few exceptions, nothing better than a heap of wretched brick or mud cabins, ranged along lines of streets either unpaved or faced with trunks of oaks. It is composed of the prince's palace, a vast old pile, now used in consequence of the destruction of the modern palace by fire in 1812, and of 67 quarters; these quarters being the separate property of the Boyars, on whose land colonies of their followers have gradually accumulated. From this circumstance, it has the appearance rather of an immense village than of a regular town. The boyars' residences are spacious, and built of stone. The handsomest building, next to the prince's palace, is the adjacent metropolitan church; both of them situated on the largest square, and in the centre of the town. There are sixty churches, built in an uncouth style, none of which have fewer than three steeples or towers, and many no less than six; some have even nine. Seven of them, as well as the twenty monasteries and convents, are protected by walls. The other edifices of note are a large bazaar, a Roman Catholic and a Lutheran church, a synagogue, several hospitals and infirmaries, and the consular residences, particularly that of the Austrian consul, which is a handsome structure, and built in good taste. In the middle of Bucharest there is a tower, called the '*Fire Tower*,' 60 ft. high, which commands a full view of every part of it. The lyceum for Greek youth is conducted by twelve professors, and the example set by the German residents has occasioned the establishment of several other schools. Most of these residents are of Saxon extraction, and consist almost wholly of operatives, particularly goldsmiths and watchmakers. The pop., though once composed of 60,000 souls, which the calamities of war and political commotions have now reduced to less than 50,000, is on the increase; and the whole number of dwellings is about 10,000. The town is full of coffee-houses, almost every one of them having a gambling or billiard-table, and of shops where sherbet and wine are drunk. Bucharest is the great commercial mart for the principality, and as this is an extremely fertile country, the

inhabitants carry on an extensive trade in grain, wool, honey, wax, tallow, and cattle. It possesses nine or ten distinct havens, of which that of Sherban-Wode is the largest and most frequented. There are no large manufactures; but small quantities of woollen cloths, carpets, brandy, &c. are made. The people are fond of outward display, and of public festivals, drinking, music, and dancing; and their dress and habits present a singular mixture of European and Eastern customs. There is a Corso, or public mall, to which the fashionables resort in great numbers, in the main street and along the bridge which crosses the Dumbovitzza. Bucharest has a public library, a society for belles lettres, and another for agriculture; it has indeed made considerable advances in civilization during the last ten or twenty years. 44° 26' N. lat., 26° 8' E. long.

BUCKINGHAM, a par., bor., and the co. t. of Buckinghamshire, to which it gives name, is situated on the Ouse, in the hund. of Buckingham, 50 m. direct distance N.W. from London. The municipal, which was formerly co-extensive with the parliamentary bor., is co-extensive with the par., which contains about 5000 acres, and is divided into six districts, having separate churchwardens and overseers of the poor, but only one church and church-rate for the whole parish. The parliamentary bor., which was enlarged under the Reform Act, returns two members to parliament. Three of the districts into which the par. is divided form the town; the other three are agricultural. In 1831 the pop. of the par. was 1672 males, and 1938 females: of these there were—males 20 years of age, 883; occupiers and labourers employed in agriculture, 225; employed in manufacture, or in making machinery, 125; employed in retail trade or in handicraft, 200; capitalists, bankers, &c., 47; labourers not agricultural, 138; male servants, &c., 117; female servants, 139.

Buckingham is an antient bor., and is described as such at the time of the Domesday survey, in which it is said to have had 26 burgesses under the protection of foreign lords. But it does not appear that the town sent members to parliament before 1544. From the circumstance of Edward III. having fixed one of the staples for wool at Buckingham, it is supposed to have been in his reign a flourishing town. The governing charter was granted in the first year of the reign of Mary (1554), in consequence of services rendered by the inhabitants in the suppression of the duke of Northumberland's rebellion on the queen's accession to the throne. It was surrendered, and a new charter granted in the thirty-sixth of Charles II. (1684). The corporation acted upon this latter charter for several years, but in consequence of a dispute with James II. in 1688, during which the king successively removed three mayors elected by them in three months, *quo warrantos* were issued, and, after some litigation, the charter of Charles II. was also surrendered. The corporation afterwards availed themselves of the proclamation for restoring surrendered charters, to resume the charter of Mary. Under the Municipal Reform Act, Buckingham has four aldermen and twelve councillors, but is not divided into wards. Prior to the Reform Act, the two members for the bor. were returned by the corporation, and the greatest number of electors which had been polled for thirty years before 1833, was eleven.

In the month of June, 1644, Buckingham was for a few days the head-quarters of Charles I.; the neighbouring towns of Aylesbury and Newport Pagnell being garrisoned for the parliament. A fire broke out on the 15th of March, 1725, which consumed 138 dwelling-houses, being more than one-third of the whole town.

No trade or manufacture is carried on in the town, except lace-making with bobbins. The only public buildings are the church, the town-hall, and the gaol. The present church is erected on the site of the castle, under an act of parliament, by which the inhabitants were to raise 4000*l.* in three years, and Earl Temple the rest: the entire expense was about 7000*l.* It was completed in 1780. The living is a vicarage in the diocese of Lincoln, the gross annual income of which is 230*l.* The old church had a lofty spire, which fell down in 1699; the tower which supported it remained till 1776, when it fell down also, just after Mr. Pennant, the well-known antiquarian tourist, had quitted the church. The entire structure was taken down, and the new church was built on a new site.

It is probable that the assizes had been generally held at Buckingham before their removal to Aylesbury. In 1758 Lord Cobham procured an act of parliament to fix the sum-

mer assizes at Buckingham, and built a gaol there at his own expense for the use of the town and county: it is a capacious building, but is little used. The town-hall was built about the year 1685, at the expense of Sir Ralph Verney. There are three stone bridges over the Ouse at Buckingham. The market-day is Saturday; there are ten annual fairs held.

Buckingham contains four daily schools, two of which are endowed with small sums: one of the endowed schools is a Latin school, the other is called the Green Coat School. There are also one boarding-school, a day and Sunday national school, and three Sunday schools, besides two hospitals and several other charities.

(Browne Willis's *History of Buckingham*—Browne Willis was chosen, in 1705, one of the representatives of Buckingham;—Lysons's *Magna Britannia*, vol. i.; *Boundary and Municipal Corporations Reports*; *Ecc. Educ. and Pop. Returns*.)

BUCKINGHAM, a co. and also a town of England, which have given a title to many individuals distinguished in our history. The first *Earl* of Buckingham appears to have been Walter Giffard, created by the Conqueror, who died in 1102. The title having become extinct was revived in 1377 in the person of Thomas Plantagenet Duke of Gloucester, youngest son of Edward III., whose son Humphrey died without issue in 1400. His heir Humphrey Earl of Stafford was created Duke of Buckingham in 1401, and his grandson Henry Stafford, 'the deep-revolving, witty Buckingham of Shakespeare, after assisting Richard III. to mount the throne, was put to death by him in 1483. His son, Edward Stafford, offended Wolsey, fell under the suspicions of Henry VIII., and was attainted and beheaded in 1521. He was the last nobleman who enjoyed the office of Lord High Constable. The title of *Earl* of Buckingham was not revived till 1617.

BUCKINGHAM, GEORGE VILLIERS, DUKE OF, third son of Sir George Villiers, knight, by his second wife Mary, a lady of the antient family of Beaumont, was born August 20, 1592, at Brookesley in Leicestershire, a seat which had been in the possession of his ancestors for nearly four centuries. His education appears to have been distinguished by any proficiency in literature; but on his return from a three years' visit to France, which he commenced in his eighteenth year (his father having died five years before), he was well skilled in all bodily exercises. As yet he was a stranger to the court, but his fine person and graceful demeanor made a strong impression on James I. The common story is, that the king first saw him when he visited Cambridge in March 16, 1615: the biographers, who have followed one another, usually speak as if Villiers had acted in the representation of *Ignoramus* on that occasion; but it is plain from Mr. John Sidney Hawkins's laborious researches in his edition of that comedy, that no part therein was allotted to Villiers. Sir Henry Wotton however, in his life of Buckingham, states that the king first saw him at Apthorpe, during one of his progresses, after Villiers had been sent by his mother to London to become a suitor to the daughter of Sir Roger Ashton, a gentleman of the bedchamber and master of the robes. From the marriage he was discouraged by Sir Robert Greham, a gentleman of the privy-chamber, who advised him rather to try his fortune at court.

Be this as it may, James no sooner knew him than he attached him to his own person as cup-bearer, and particularly gave him the name of Steenie. Promotion followed most rapidly, and he successively became a knight and gentleman of the bedchamber, with a pension of 1000*l.* a year out of the Court of Wards. On the following New Year's Day he was made Master of the Horse, and installed knight of the Order of the Garter. In the next August he was created Baron of Whaddon and Viscount Villiers; and in the ensuing January he was advanced to the earldom of Buckingham, and sworn of his majesty's privy council. Scarcely another year elapsed before his patent was made out as Marquess; he was appointed Lord Admiral of England, Chief Justice in Eyre of all the parks and forests on the south of Trent, Master of the King's Bench Office, High Steward of Westminster, and Constable of Wind-Castle; 'none of them,' as Sir Hugh Wotton adds, 'unprofitable pieces.'

A rise so unprecedented could not fail to create abundant jealousy; and it is by no means easy at present to ascertain the truth of many of the contemporary imputations under

which he intended. One of those, which perhaps may be considered most doubtful (the whatever might be his faults, Buckingham never evinced deficiency in personal courage), related to his marriage, in 1620, with the only daughter of the earl of Arundel. It was not likely that he should make dishonourable advances to the richest heiress in the kingdom, nor that he should be forced into a union with her by the misfortune of her injured father. Such however was the accident of the time. Three years afterwards, while negotiations were pending for the marriage of Charles Prince of Wales with the Infanta of Spain, Buckingham inspired the prince with a belief that he would effectually secure the view of his future consort, and terminate every difficulty which the slowness of diplomatic intercourse, if he would repeatedly repair to the court of Madrid and see his mistress in person. The secret motive which prompted him was jealousy of the earl of Bristol, who had hitherto conducted the treaty; and the king was induced reluctantly to consent to a project which he disapproved, and the suggestion of which it is believed he never forgave in his heart.

Many of the adventures of this expedition were of the most romantic cast. The prince, in company with the marquis, set out on the 13th of February, 1623, from New Mall in Essex, with disquieted minds, and with increased esteem of Thomas and John Smith. On ferrying over the river near Gravesend, they found themselves without silver, and the piece of gold, worth twenty-two shillings, with which they presented the boatman, revealed as much suspicion that he, feeling a manifying as to their quality, and thinking these gentlemen gone beyond sea to settle some quarrel, laid information with the officers of the town, who sent orders to stop them at Rochester. They had passed through that city however before the intelligence arrived; but on the bank of the hill beyond it they encountered the French ambassador, well attended, and in one of the royal barges. This difficulty they escaped by quitting the high road, and 'making their path home to leap hedges.' By this time the mayor of Canterbury had received information, and he strictly detained them, till the marquis 'thought it best to dismask his heart, and so told him he was going severally to take a secret view, being advised of the forwardness of his majesty's foot, which was then in preparation on the narrow seas.' On the way afterwards, the baggage post-boy, who had been at court, 'gave a glimpse of who they were, but his mouth was easily shut,' so that 'through foul horses and those pretty impediments,' they did not reach Dover till six at night.

At Paris, having escaped some similar accidents on their route, they spent a whole day, and had a close sight of the Princess Henrietta Maria, 'at the presence of a masquing dance then in preparation. We have not room for some other remarkable personal adventures; but we must not omit a noble success made by Buckingham to the Countess of Olivares, who told him of a report that the prince was secretly designing his departure from Madrid. To this Buckingham replied, that 'though love had made his highness steal out of his own country, yet had would never cause him to leave Spain in other manner than should become a prince of his blood and generous virtues.'

Buckingham returned in increased popularity, and was hailed by the country as 'saviour of the prince.' He had been created a duke during his absence; and upon his landing he was nominated Lord Warden of the Cinque Ports, and Steward of the Manor of Hampton Court.

The war with Spain which ensued, the marriage with Henrietta Maria of France, and the appointment of the earl of Bristol, are sufficient proofs of Buckingham's continued ascendancy. Charles succeeded to his father's throne in 1625, and the duke still retained the high honours which he had enjoyed in the former reign, and the intimate confidence of the new king; facts which, it may be thought, wholly disprove a current story, that he had on one occasion so far forgotten the dignity of the late apparent as to intimate him with a blow. Puffing adds the continued favour of the crown, the anecdote is rendered most improbable by the character of the parties concerned; for Buckingham, although sometimes thoughtless and impetuous, was a wretched scurrilous, and libelous never on any occasion forgot the respect due to his own honour.

A similar, though not an equally strong doubt may perhaps be entertained respecting the motive which induced him to procure the war against France. It has been said that when he was disappointed of the success of his

Princess Henrietta, he had the audacity to make advances to Anne of Austria, the queen of Louis XIII. Cardinal Richelieu, a supposed rival, detected the intrigue, and caused her to be put in a convent; nevertheless Buckingham, who still on his homeward route, returned to Paris in disguise, and had a stolen interview with the object of his passion, which it is believed was not unsuccessful. When however he afterwards solicited the post of ambassador at the court of France, the appointment was finally interrupted by Louis, who had been informed of his conduct; and Buckingham replied in pique, that he 'would see the queen of France again in spite of all the enemies which that kingdom could oppose.' This story appears to have originated with some gossiping French reporters of secret history; but as it seems to have been believed by Clarendon, and is adopted by many writers of authority, it is not to be entirely rejected.

The war with Spain, although undertaken without due grounds, had been popular in Great Britain, perhaps on account of the long peace which had preceded it. But the ill success which attended an expedition against Cadix rendered Buckingham odious to the Commons, and even occasioned his impeachment, from which he escaped chiefly through the interferences of the king.

The spirit which in the end overthrew the kingly power was already awakened, and the action submitted with reluctance to the levies necessary for the conduct of hostilities with France. The duke of Buckingham appears never to have possessed much knowledge of the art of war; yet he rashly sailed with 100 ships and 7000 sailors for the coast of La Rochelle, at that time in possession of the Huguenots, so wholly without concert had this expedition been undertaken, that the Rochelais were alarmed at the appearance of this large fleet in their harbour, and being ignorant of its intentions, and ill-prepared at the moment for a general action, they closed their gates and refused the proffered assistance. Buckingham then directed his operations upon the neighbouring Isle of Ré, and after fruitless operations during those months, and a defeat which cost him 2000 men in attempting re-embarkation, he returned, according to the language of Home, 'totally discarded both as an admiral and a general, and bringing no praise with him but the vulgar one of valour and personal bravery.' It must however be remembered that letters are still extant from the king to his minister, in which the former throws the blame of the failure of this expedition upon the inadequacy of his supplies, and the conduct of 'them at home.'

A large force was entrusted to Buckingham for another attempt to relieve La Rochelle, and he went to Portsmouth to superintend the preparations. 'There were many stories,' says Clarendon, 'scattered abroad at that time of several profusions and prodigies of the duke's intemperance and violent death. Amongst the rest there was one which was upon a better foundation of credit than most discourses usually have, which he proceeded to relate at some length.

On August 24, 1628, the duke had on dressed himself in his chamber at Portsmouth, was preparing to take a general breakfast, in order to communicate to the king, then holding his court at Southwark, about five miles distant, some important intelligence which he had received from La Rochelle. The French gentlemen with whom he had been discussing this news, 'according to the custom of that nation, and by the usual dialect of their language, employed so much passion and vehemence, that the standers by, who understood not French, did believe that they were angry, and that they used the duke rudely.' On the announcement of breakfast he drew near the hangings to pass into the adjoining room, and while conversing with Sir Thomas Pyper, one of his counsellors, 'he was on the sudden struck over his shoulder on the breast with a knife, on which, without saying any other words but "The villain has killed me!" and at the same moment pulling out the knife himself, he fell down dead, his weapon having pierced his heart.

As neither the blow itself nor the assassin had been seen, suspicion at first fell on the French gentlemen, who for a short time were in considerable danger. A hat however was soon picked up, into the crown of which had been sewed a paper, containing part of the declaration of the House of Commons, to which the duke was styled 'an enemy to the kingdom,' and under it were written a short justification or renunciation belonging to the prayer. About the same time, a man was seen walking before the door, very comely, without a hat, who on being faced with the constabulary,

admitted that he was the perpetrator. Having been rescued in the first instance from the fury of the bystanders, who would have put him to instant death, he was recognised as John Felton, a younger brother, of mean fortune, and of Suffolk extraction. He is represented to have been by nature silent, gloomy, and melancholy, to have withdrawn from the army in consequence of disappointment in promotion, and to have afterwards fed his irritation against Buckingham on this account, by listening to the many invectives which passion and prejudice suggested. He might not be without a touch of insanity; and it appears he was awakened to the full enormity of his crime before his execution. The news of the duke's murder was announced by Sir John Hippley to the king shortly after its occurrence, while he was attending public worship. Charles continued his devotions, unmoved, as it would appear, by the sad intelligence which had been whispered to him, 'and without the least change of countenance till prayers were ended, when he suddenly departed to his chamber and threw himself on his bed, lamenting, with much passion, and with abundance of tears, the loss of an excellent servant, and the horrid manner in which he was deprived of him, and he continued in this melancholic discomposure of mind many days.'

George Villiers was murdered in his 36th year, having had three sons and one daughter by his wife Lady Catherine Manners. The Lady Mary was his first born; his eldest son died at nurse; his second succeeded him in his title and estates, and his third was Lord Francis.

An instance of Buckingham's public-spirited munificence while employed in concluding a treaty at the Hague ought not to be omitted, especially as his faults have been carefully chronicled. Hearing that a rare collection of Arabic manuscripts, which had been made by Erpenius, a scholar of great erudition, was at that moment on sale by his widow to the Jesuits at Antwerp, 'liquorish chapmen,' as Sir Henry Wotton adds, 'of such ware,' the duke anticipated them by giving the widow five hundred pounds, 'a sum above their weight in silver, and a mixed act both of bounty and charity, the more laudable from being out of his natural element;' for Buckingham, as we have already stated, had received but an imperfect education. It was his intention, if the design had not been prevented by his unexpected death, to present these MSS., together with many other similar treasures, to the University of Cambridge, of which learned body he was chancellor: after his assassination they were deposited by his widowed duchess in the public library of that university, where they still remain.

BUCKINGHAM, GEORGE VILLIERS, DUKE OF, second son of George Villiers, also duke of Buckingham, was born in London, January 30th, 1627. He was educated at Cambridge, under the especial patronage of the king, and after travelling with his brother, Lord Francis Villiers, he returned to England on the outbreak of the civil war, and espoused the royal cause. The earl of Holland, under whom he served, was defeated by Fairfax, near Nonsuch, in which battle Lord Francis, after fighting bravely, was killed, and the duke himself escaped with difficulty beyond the seas. The parliament required him to return within forty days, under the penalty of confiscation of his estates; but he preferred remaining abroad, where he supported himself by the sale at Antwerp of a valuable gallery of paintings which his father had collected. He afterwards served under Charles II. at Worcester, and was again compelled to take refuge on the Continent.

Part of his estates had been assigned by the parliament to Fairfax, who generously allowed the duchess of Buckingham, the duke's mother, a considerable annuity. The duke, not without hope that the republican general might exercise similar liberality towards himself, ventured, although outlawed, to return to England, was well received by Fairfax, and married one of his daughters in 1657. Cromwell, taking this alliance ill, arrested Buckingham, and committed him to the Tower. On the abdication of Richard Cromwell he was released from Windsor Castle, the place which had been allotted for his less rigid confinement; and on the Restoration he recovered his paternal estates. He had already received the order of the garter while in Holland, and he was now sworn of the privy council, and nominated lord lieutenant of the county of York. His political conduct however was most versatile, and the influence which he obtained over Charles by his talent for agreeable ridings was most unworthily employed in procuring the fall of Clarendon. In his habits Buckingham was utterly profligate;

and he appears to have regarded buffoonery as an honourable and legitimate weapon against a court rival. Not unfrequently, when the grave chancellor had retired from the council-table, Buckingham threw the king into convulsions of laughter by mimicking the gait of the venerable statesman, carrying a cushion dangling by his side as the bag and seals, and ordering an attendant to precede him with the bellows as a mace.

On the formation of the *Cabal* ministry Buckingham's name contributed an initial to that anagram. In 1670 he proceeded on an embassy to the court of France, nominally to condole with Louis XIV. upon the death of Charles's sister, the duchess of Orleans, but in truth to urge his accession to the triple alliance. On that occasion, he condescended to pander to his master's pleasures by providing him with a French mistress; but so light of purpose and frivolous was he that the ascendancy which he might thus have secured was lost by his total neglect of the afterwards duchess of Portsmouth, immediately upon her embarkation. Objects yet more unworthy than that lady had been already introduced by him to the royal notice, and the actresses, Mistress Davies and Nell Gwyn, were first known at court through him. 'He was a man indeed,' to use the strong language of a contemporary by whom he was well known, 'who had studied the whole body of vice;' and assuredly no one had ever less barrier of principle to stand in the way of his instruction. So entirely did he set at nought all moral feeling, that when Charles II. on one occasion expressed apprehensions that his injured queen might probably interfere with some intrigue by her jealousy, Buckingham offered to remove her to a West Indian plantation, where 'she should be well taken care of, without creating more trouble. The king, though selfish and cold-hearted, had a kind of careless quality, sometimes standing in the place of good nature, which made him revolt from so atrocious a project.

Already, in 1666, Buckingham had manifested symptoms of his fickleness, and had forfeited all his high offices, which however he was subsequently restored through his own submission and the king's extreme facility. The duke of Ormond had taken a considerable part against him on this occasion, and so deeply did Buckingham cherish resentment that there is strong reason to believe he was concerned in a plot which nearly ended in the murder of that nobleman by Col. Blood. The transaction was not inquired into, but the earl of Ossory, eldest son of the duke of Ormond, could not bear from taxing Buckingham with his guilt, even in the palace itself. Being at court, and seeing the favourite standing by the king, he addressed him to this purpose:—'My lord, I know well that you are at the bottom of this late attempt upon my father, but I give you warning, if by any means he comes to a violent end, I shall not be at a loss to know the author. I shall consider you as the assassin, I shall treat you as such, and whenever I meet you I shall pistol you, though you stood behind the king's chair; and I tell it you in his Majesty's presence that you may be sure I shall not fail of performance.' (*Carter, Life of the Duke of Ormond*, ii. p. 225.)

Notwithstanding his public and private crimes, Buckingham still retained the king's favour, was still employed in important embassies, and like his father was elected chancellor of the University of Cambridge. On the dissolution of the *Cabal* ministry and his dismissal from office, he gradually weaned himself from the court. In 1674 he resigned the chancellorship of Cambridge, and vehemently supported the Nonconformists by his opposition to the Test Act. He was deeply engaged in the popish plot, and the remainder of his days was spent in factious opposition, and in connexion with the intrigues of Shaftesbury.

One incident in Buckingham's life but too plainly exhibits the demoralization of the times but too plainly exhibited. Buckingham, having been detected by the earl of Shrewsbury in an intrigue with his wife, killed him in a duel. The guilty woman who concerted the meeting, disguised like a page, held the duke's horse during the combat, and at its close rendered herself more infamous by undissembled joy and shameless avowal of her passion for the paramour, yet reeking with her husband's blood. For this murder, which occurred in February, 1667-8, the duke received a royal pardon, but it was afterwards brought before the House of Lords in a petition presented by the earl of Westmoreland in the name of the young earl of Shrewsbury, who desired justice against Buckingham for the father's blood and his mother's infamy. The duke replied,

' Just that it was very true he had the hard fortune to kill the soul of Shakespeare, but that it was not the greatest punishment in the world; that he had caught him twice before, and had so often given him his life, notwithstanding that the said soul threatened that if he would not again fight him he would poison him whenever he could find him, and that for those reasons the king had been induced to pardon the fatal result of their meeting. Secondly, that as heretofore part of the petition which regarded Lady Shakespeare, he knew that here his conversation with that lady was reprovable by that House, but that if he had given offence by it she was now gone into retirement. The parliament was soon afterwards prorogued, and although a day had been appointed for taking the petition into consideration, it does not appear that it was further noticed. The retirement of the lady was probably a satisfaction. It is believed that she had a son by the duke, who died young, she afterwards married George Rodney Bridges, second son of Sir Thomas Bridges, of Keynsham in Somersetshire, knight, and died April 20th, 1702.

On the death of Charles II. the duke of Buckingham, conscious that he would have a more difficult master in his successor, and finding his health ruined by a long career of vice, and his fortune diminished by unbounded extravagance, retired to his seat of Halesley in Yorkshire, where he devoted himself to studious amusements. His death occurred April 17th, 1688, at the house of a tenant at Kixby Meadows, after a few days' fever produced by sitting on the damp ground when heated by a fog-breeze; but it appears that the picture of desolation so finely drawn by Pope in the third of his 'Moral Essays' is greatly exaggerated. The duke had not reduced himself to beggary, nor did he breathe his last in the 'venerable man's worst room.' The portrait which Dryden has presented under the character of Zambri in 'Absalom and Achitophel' is by no means thus overcharged, and may be unhesitatingly received not only on account of the fitness of its execution, but also the justice of its features.

The duke was interred under a sculptured monument in Henry VIII's chapel in Westminster Abbey. By his death without issue his branch of the ancient family of Villiers became extinguished. It is said that he was the first person who introduced from Venice into England the manufacture of glass and crystal. In the intervals which this remarkable man snatched from pleasure and politics he employed himself in literary composition. For the stage he produced 'The Rehearsal, or Night will take place,' a tragic-comedy, 'The Battle of Bogano,' a farce, 'The Citizen,' a loose and improbable comedy, stolen from Beaumont and Fletcher, and 'The Rehearsal.' Besides these he published a 'Satire against Mankind,' some poems, among which is 'The Last Mistress,' a complaint against the custom of — (obscurely, as there can be little doubt), and one of his speeches in Parliament. A treatise is also attributed to him in his later years, the genuineness of which may perhaps be doubted upon a perusal of its title, 'A Discourse upon the reasonableness of Men having a Religion, or worship of a God.' These writings were collected in an octavo volume of miscellaneous works in 1728.

Dr. Johnson, in his Life of Dryden, characterizes 'The Rehearsal' as a farce which Buckingham wrote in conjunction with Butler, the author of Hudibras, Martin Collier of the Chamber House, and Sprat, at that time his chaplain. He adds, that Sir William Davenant was the original hero under the name of Bilboa, that Sir Robert Howard also was at one time intended, and that it was only in the last draught that Dryden was introduced as layser. One intimation which he gives is by no means to be regarded, that the design was probably to ridicule the reigning poet whoever he might be. According to the same authority, the debate between love and honour which keeps France Valentin in a single boat, alluded to the misunderstanding of Buckingham's economy, the duke of Ormond, who lost favour in the rebels while engaged in an assignation. The circumstances which Johnson more than once throws out concerning 'The Rehearsal,' to say the least of them, appear to be but splendid, and the changes of the scene had been long before sworn to in an address from the publisher to the reader prefixed to the 'Key.' Thus 'The Rehearsal' appears to be a *chef d'œuvre* which from its sterling wit still gives

infinite pleasure, notwithstanding the obscurity in which it is involved from the want of that nature illustration by which in modern times it would have been so copiously elucidated.

The life of the duke of Buckingham was printed and his works were printed by the notorious Earl in 1721, on which occasion a vote passed the House of Lords, declaring it to be a breach of privilege to print any account of the life or any of the works of a deceased peer without consent of his heirs or executors.

John Rochester was born in 1629, and succeeded his father Edmund earl of Malmesbury in that title in 1638. When he was but 17 years old he served in the same ship in which Prince Rupert and the Duke of Albemarle had embarked by the first Dutch war. At the meeting of parliament in the following year he was summoned by writ to take his seat but was excused on account of sickness on a medium of the earl of Northumberland. In an encounter with the noted earl of Rochester, which occurred about this time, he exhibited himself, according to the account in his autobiography, with distinguished credit. None of the particulars by which regarding as a source of the tarnish of the times. The earl of Malmesbury found that the words upon the report of which he had challenged Rochester were never indeed spoken, but still, indignantly thinking himself compelled to go on with the quarrel, he agreed, at his antagonist's choice, to fight on horseback, a war in England a little unusual. In order to avoid suspicion, on the night before the duel he and his second by Sir Knightbridge, who, they found themselves in greater danger of apprehension than if they had remained in London, because we had all the apprehension of highwaymen that had a mind to be skulking in an odd out for new night; but this I suppose, the pupils of that house were used to, and so took no notice of us, but liked us the better.' Lord Rochester appeared at the appointed place, leaving with him as his second 'an errant life-guardian whom nobody knew.' Besides this, the parties were so unequally mounted, that in the end, after some remonstrance, they all agreed to fight on foot. On their way to the ground however Lord Rochester intimated that it was an account of sickness that he had at first chosen to fight on horseback, and that he now found himself able to fight in all any way, much less able. They separated therefore, as Sheffield informs us, 'entirely to the ruin of Lord Rochester's reputation for courage.' Dr. Johnson, in his life of Sheffield, without entering into any of these details, mentions that that nobleman has related this story perhaps too ostentatiously, as Lord Rochester's surviving sister, Lady Mansfield, once told him with sharp reproaches. It appears to us, on the contrary, that his narrative is very plain, and does not exhibit any symptom of boasting.

So far indeed was he from unreasonable vaunting of personal courage, that in his account of an engagement with De Ruyter in the second Dutch war, in which he served with great gallantry as a volunteer on board the ship of the earl of Ossery, he tells us that 'in the morning, when the enemy's great shot came on both sides of us, I thought it impossible to escape without having a limb at least, and was accordingly pretty uneasy; but about the afternoon, when the great sides came only one way, though without interruption, I began to grow a little less sensible of the danger, which yet I was very glad to see ended at night. There are not the words of a juggler, and his behaviour in the engagement was so distinguished as to procure for him the command of the best second rate ship in the navy.

In the land service he raised a regiment of foot, and commanded it as colonel; and the old Holland regiment, in which he bore the like command, was also placed under his orders. He was installed Knight of the Garter and appointed a gentleman of the bedchamber. For a short time he entered the French service under Marsin, and when the unhappy Monmouth showed symptoms of rebellion, Sheffield received the lord-lieutenancy of Yorkshire with the government of Hull, from which the duke was dismissed; or as Dryden tells us, he became one

* When Herod's line with Hercules did end,
That from his distichion now does come.

On the accession of James II. he was sworn into the privy council and appointed Lord Chamberlain. Not being very forward in his religious opinions, and instead holding a place in the high commission, with the ill-galaxy of which he afterwards professed himself to be unacquainted, he took

* Which was known when the 'Key' was first published, but was not from the dramatic nature of 'The Rehearsal' printed in 1728. The title of the work is given in 1728.

no part in the revolution. Once it was designed to request him to join in the invitation to the prince of Orange, but the earl of Shrewsbury declared that he well knew that Mulgrave's concurrence was not to be expected. His reply to King William, who mentioned this fact to him, was singularly bold and upright. 'Sire,' said he, 'if the proposal had been made, I would have discovered it to the king whom I then served.' To the honour of William, it should be added, that he was far from being displeased with this answer. Mulgrave however by no means courted the favour of the reigning king. He opposed him on some important questions, and it is pleasant to relate that this opposition neither interfered with his advancement, nor did his advancement silence his opposition. In 1694 he was created marquess of Normanby, and afterwards was admitted into the cabinet council with a pension of 3000*l.* per annum.

On the accession of Queen Anne he was named Lord Privy Seal. It is said that an early tender attachment to that princess once nearly cost him his life; for that Charles II., in order to punish his ambition, despatched him in a leaky vessel to the relief of Tangier. In 1703 he was created duke of Normanby and of Buckinghamshire, 'there being suspected to be, somewhere, a latent claim to the title of Buckingham.' The claim to which Johnson alludes in this passage we have not been able to trace.

In consequence of the ascendancy of the duke of Marlborough he resigned the Privy Seal, and greatly offended the queen by supporting the Tory motion for inviting the Princess Sophia to England. He refused the strong temptation of the chancellorship, which was offered to lure him back, and employed his leisure from politics in erecting Buckingham House at Piccadilly, upon land granted by the crown. Some vignettes of that house, which since it has ceased to exist may have become valuable, are found at the heads of some chapters and in illuminated capitals in the 2nd volume of his collected works. Of his mansion, and of his mode of life in it, he has left a pleasant and well-written description in a letter to the Duke of Shrewsbury. In 1710 he was made Lord Chamberlain of the household, but after Queen Anne's death he reverted to opposition. He died February 24, 1720-1. By his first two wives he was without children; by his third, a daughter of James II. by the countess of Dorchester, and widow of the earl of Anglesea, besides other children he had a son Edmond, by whose death in 1735 the line of Sheffield became extinct. To that lady he appears to have been tenderly attached, and in the construction of Buckingham Palace he paid especial attention to her convenience. 'The highest story of the private apartments (as he tells us in the letter above alluded to) is fitted for the women and children, with the floors so contrived as to prevent all noise over my wife's head during the mysteries of Lucia.'

As a poet the duke of Buckinghamshire is below criticism, and it is to his rank rather than to his talent that we must ascribe the praises which he received from Roscommon, from Dryden (to whom he erected a monument in Westminster Abbey), and from Pope. Dryden perhaps received his ten guineas for the eulogy in the dedication to 'Aurengzebe,' in which it is remarkable that he extols rather the political than the literary merits of his patron; but the character given in 'Absalom and Achitophel,' which is more to our purpose, was probably altogether gratuitous.

'Sharp-judging Adriel, the Muse's friend,
Himself a Muse.'

Addison and Burnet have respectively commended the 'Essay on Poetry,' and Pope has preserved the memory of the best verse in it.—'Nature's chief masterpiece is writing well,' by incorporating it in his own 'Essay on Criticism.' The few prose pieces which the duke of Buckingham has left to us are light and graceful, and although now perhaps forgotten, they deserve a much higher rank than his poetry. His remains lie under a sumptuous monument erected by his widow in Westminster Abbey. Moreri, in his article 'Boukingham,' confounds John Sheffield with the second George Villiers, and makes a strange medley of the two, ascribing the 'Rehearsal' to the former.

George Grenville Nugent Temple, second earl of Temple, was created marquess of the town of Buckingham in 1784, and his son, Richard Grenville Brydges Chandos, was advanced to the dukedom of Buckingham and Chandos in 1822.

BUCKINGHAMSHIRE, an inland co. of England, of

very irregular form. Camden derives its name, though his etymology has been disputed, from the abundance of beech trees (in Saxon *bocca* or *bucca*), whence first the town of Buckingham, and then the co. received their designation. It lies between 51° 26' and 52° 12' N. lat., and 0° 28' and 1° 5' W. long. It is bounded on the N. and N.W. by Northamptonshire; on the W. by Oxfordshire; on the S. by Berkshire; and on the E. by Bedfordshire, Herts, and Middlesex. Its greatest length measured nearly N. and S. from the neighbourhood of Olney to the river Thames above Staines is 27 miles. Its breadth varies much, the greatest being about 27 miles.

Aylesbury (which, though it does not give name to the co., has, on the whole, the best title to be considered the county town) is about 37 m. in a direct line N.W. by W. of London; or by the road through Berkhamstead and Tring 38½ m.; or 40¼ m. by Uxbridge, Amersham, and Wendover.

The area of the co. is 738 sq. m. (472,320 acres): taking the sum of the returns for the different parishes, 463,820 acres: it is one of the smaller English counties, being the thirty-third in the scale of relative magnitude.

The pop. by the census of 1831 was 146,529.

Surface, Hydrography, and Communications.—The principal hills in Bucks are the Chilterns, a chalk range, which entering the co. from Oxfordshire run across it in the N.E. direction and enter Bedfordshire near Dunstable, separating the basin of the lower Thames from the basin of its tributary the Great Ouse, and from the basin of the Ouse. Near Irvinghoe the elevation of these hills is 904 ft. above the level of the sea; and another eminence S.W. of Wendover is 905 feet. Muzzle Hill near Brill is 744 ft. above Bow Backhill, between Fenny Stratford and Woburn. Under the northern slope of these hills is the rich vale of Aylesbury, watered by the Thames. In that part of the co. S.E. of the Chilterns there is a good deal of wash, though it has much diminished within the last 100 years. The prevailing timber in the S. part of the county is oak. There is some wood on Whaddon chase, a tract of open land in the northern part of the county. The whole of the Chiltern district is said to have been a forest; and according to ancient historians the Chilterns and the S.E. part of the co. was once so covered with woods, chiefly of beech, as to be almost impassable, till an abbot of St. Alban's had several of them cut down because they afforded harbours to thieves. The name Chiltern is derived by Camden from an old English word (British, *i. e.*, Celtic, we presume) *Chilt* or *Chilt*, signifying chalk. The chief riv. of Bucks is the Thames, which skirts the co. on the S.W., separating it from Berkshire, and, for a short distance, from Surrey. The Coln, which separates Berks from Middlesex upon its junction with the Thames at Staines; the Thames, also, the feeder of the Thames: the Ouse, and its tributary the Ousel.

The *Thames* becomes the boundary of the co. a few miles below Henley, and has a winding course first to the N. and then to the S.E. past Great Marlow, Taplow (near Maidenhead), and Eton, to its junction with the Great Ouse, being navigable throughout this part of its course. Its waters do not receive any material accession from the Great Ouse; the Wick, which passes High Wycombe, joins it near Marlow; one or two small streams flow into it near Henley; and another a little lower down opposite Old Windsor.

The *Coln* becomes the boundary of the co. a few miles below Rickmansworth, and continues, by one or other of its arms, to be the boundary until it meets the Thames. Its general course is S.; it passes Uxbridge in Middlesex, and Colnbrook, and receives a considerable stream, the Maidenhead, from Amersham. It is not navigable. It produces trout and other fish.

The *Thame* is formed by the junction of several small streams; the principal, to which the name of *Thame* is assigned, rises near the vil. of Stewley, between Fenny Stratford and Aylesbury; and flowing in a winding channel, but on the whole in a S.W. direction, unites near the vil. of Quarrendon (W. of Aylesbury) with another stream, which rises near Tring (Herts), and flows partly through Hertfordshire and partly through Bucks, and for a part of its course forms the boundary of the two counties. These streams before their junction are swelled by a few insignificant brooks. Their united stream flows to the S.W. until it reaches the border of Oxfordshire, near the town of Thame. From the junction of the two streams to the

point it receives some rivulets which water the vale of Aylesbury. Great Ouse, according to some of our authorities the principal river. After separating Bucks from Oxon for a few miles, the riv. enters Oxfordshire, through which it flows till its junction with the Thames at Deanswater. The whole length of the Ouse in that part of the course which belongs to Bucks is about 28 miles. Its further course till its junction with the Thames is about 14 m., making its whole course 42 miles. This riv. abounds with fish (salmon are obtained by the Anger), and produces silk, wool, smelt, trout, and gudgeon.

The length of the Ouse, and the extent of surface which it drains, give it a high place among the English rivers; but it is only in the upper part of its course that it is accompanied with Bucks. It passes the boundary of the co. at Torrington near Brackley (Northamptonshire, in which co. the Ouse rises), and after dividing it for a few miles, first from Northamptonshire and then from Oxfordshire, quits the border, and flowing E. and then N.E. through the co., past the town of Buckingham again becomes a border stream, and separates Northampton from Bucks. Again quitting the border it crosses another part of the co., flowing in a very winding channel to the N.E., near Newport Pagnall (where it receives the Ouzel), Weston Underwood, and Olney. After striding Bucks from Bedfordshire for a short distance, it finally quits the co. a few miles below Olney. Its whole course within the co. is 49 m.; the direct distance from the point where it first enters to the point where it finally leaves the co. 23 m.; increase of length by its sinuosity 26 miles.

The *Ouzel* is formed by the junction of several small streams, which rise on the N. slope of the Chilterns or their continuation, the Detonable Downs, and unite on the border of Bucks and Bedfordshire, above Leighton Buzzard. After dividing for several miles the two counties it quits the border, and flows through Bucks N. to Newport Pagnall, where it falls into the Ouse. Its whole length may be computed at 25 to 30 miles. It is remarkable for its porous rocks, and bream.

Bucks is tolerably well furnished with canals. The Grand Junction enters the co. from Hertford not far from Luton and runs N. to Newport Pagnall, following the valley of the Ouzel. From thence it follows the valley of the Ouse till it enters Northamptonshire near Stony Stratford. There are several cuts from this can. in Bucks; one to the town of Buckingham, and another to Wendover, and a third to Aylesbury, besides a shorter cut to Stony Stratford.

Several important roads cross this county. The parliamentary and mail road through Chesham to Holywell, the main channel of communication between the metropolis and Ireland, crosses the N. part in a N.W. direction, between Hemel Hempstead and Stony Stratford; another road to Chesham, nearly parallel to this, and more to the N., passes through Newport Pagnall. In the S. part of the co. there is the Oxford road through Beaconsfield and High Wycombe, and the great W. Bath and Bristol road between Goldsmid and Maidenhead. There is also a road to Birmingham through Aylesbury, Winslow, and Buckingham.

Geological Character.—The general direction of the outcrops of the different geological formations which cross this county is N.E. and S.W.; and the formations present themselves successively to the observer as he travels N.W. The N.E. part of the county, included between the Thames and the Coln, is occupied by the plastic clay which skirts the London clay. Only a very small portion of the London clay is found in Buckinghamshire, in the neighbourhood of Wycombe. The chalk underlies the plastic clay, and rises from beneath it, forming the range of the Chiltern hills. From the summit of the N.W. escarpment of this range is an extensive view over the adjacent low country. The chalk itself, which is generally found skirting the chalk, rises from beneath it, and is in turn succeeded by what is termed Lutonworth clay, or sometimes, from its being favourable to the growth of the oak, *oak tree soil*; but this last designation is objected to, as tending to confound this with another stratum, which, from the same cause, has received a like designation. Naulstone, more or less ferruginous, comes out from beneath the clay, and is succeeded by the London clay, which is known by the name of Aylesbury stone. The same formation, which lies beneath the chalk, are much exposed and succeeded by the debris of the chalk hills. The chalk itself and the successive Lutonworth clay form

the soil of the fertile vale of Aylesbury; the Lutonworth clay into a ridge bounding that vale on the E. and N.W.

The entire series of formations succeeds those which we have already named, and occupies the N.W. part of the county. Only two members of the principal formations of this series appear in Bucks. The Oxford or white clay rises from under the Aylesbury limestone, and extends to the town of Buckingham and to the N.W. of Silver Streetford and Newport Pagnall. To this formation succeeds that containing the coralline, fossiliferous, great oolite, and other strata.

Agriculture.—The climate of Buckinghamshire is mild and healthy, like that of most of the inland counties in which there are no fens or marshes to suspend fevers or endemic diseases. The chalk hills, which traverse it through its whole breadth from S.W. to N.E., are neither very high nor bleak, and the general temperature is favourable to the ripening of most of the crops usually raised in Great Britain. The hills, which are a portion of the Chiltern range, extending from the borders of Berkshire to Bedfordshire, divide the county into two distinct parts, varying in soil and fertility. To the W. lies the fertile vale of Aylesbury, which contains some of the richest pasture in England, and is a part of the valley of the Thames. Towards the N. of this rich tract are some inferior soils; and as you proceed from it still farther N. some very poor red clays and gravels, which require a great outlay to be well cultivated, and return little profit to the farmer. Where they are not under a good system of tillage, which is but too common, they afford little crop, and scarcely a bare maintenance to the husbandman. They are no doubt capable of improvement, but with low prices for agricultural produce, there is no great inducement to lay out capital on the improvement of poor land.

Towards Bedfordshire there are some light sands partaking of the nature of the sandy hills which cross that county. On the N.E. of the county the surface is more varied, there being several depressions or valleys on the eastern slope of the chalk, in which some good lands occur. The mixture of chalk with the clay forms a soil well suited to wheat and beans, which, with the help of moderate manuring and good tillage, produces abundant crops. Further E. from the chalk hills are various undulations of the surface, with corresponding variations in the soil; some of the elevations consist of gravel intermixed with clay or loam; others are composed entirely of poor ferruginous sand; and are but partially cultivated, a portion being planted with trees, which seems to be the most advantageous way of disposing of poor sands, in which hills will grow several hoth. Descending towards the great plain in which the Thames flows, the soil improves greatly; a good loam lying on a gravelly subsoil offers a sound soil for the growth of turnips and barley; and on this land there has been considerable improvement in the mode of cultivation, since many of the old common fields have been inclosed. In the plain which extends along the Thames and to the borders of Middlesex, are some very good and well-cultivated soils. From Marlow to Mares, and for a few miles from the Thames, the cultivation of the land is conducted on good principles, as may be observed all along the great Bath road as far as Maidenhead bridges. The lower lands along the Thames and Coln, which are occasionally flooded, are in permanent meadows and very valuable. The whole of this plain consists of a good loam lying on the blue clay, called the London clay; but with the interposition, in many places, of a stratum of gravel, which adds much to the soundness of the soil above, by forming a natural drain for the waters. The arable land in this part of the county, although much inferior to that in the vale of Aylesbury, is more carefully cultivated, and the general average return from it is probably fully as great.

According to the estimate made in the Agricultural Report in 1809, the county of Buckingham contains about 292,000 acres of land. Later calculations and measurements of the survey made for the Board of Ordnance make the surface considerably larger. One-half of this is in meadows and pastures, and the other under the plough. The proportion varies according to circumstances. A high price of corn is a temptation to break up grass lands, and low prices induce the farmer to lay down his arable in grass. It is to be regretted that this has often been done unwisely, and especially that the lands laid down to grass have been grossly exhausted by overcropping, and some with seed

seeds in a foul state, by which great loss has been sustained both by tenant and landlord.

A great many commons and common fields have been inclosed of late years, and considerable improvements have consequently been made; but the progress has not been so rapid of late, owing to the low prices of agricultural produce. The present gross amount of produce in corn, cattle, and from the dairy, which this county sends to the metropolis and surrounding markets, is however much greater than it was 20 years ago, and will no doubt increase with the increase of capital and skill applied to the cultivation of the soil.

A great advantage to Buckinghamshire, in an agricultural point of view, is the convenience of water carriage by the Thames and by the canals which traverse it in several directions. The railroads projected and in progress will enable the farmers to send their produce to London at a still cheaper rate; but this accommodation will be still further extended by the proposed Birmingham and London canals which will intersect this county, and by which the canal distance between Manchester and London will be lessened 23 m., with 77 fewer locks: the estimate is three millions.

There was formerly a very inconvenient division of the land in many places, called *yard land*; in the law books styled *virgata terra*. This somewhat resembled the *run rig and run dale* in Scotland. [BERWICKSHIRE.] It consisted of various narrow and unconnected strips about a pole wide, which, taken together, amounted to 30 or 40 acres, and to which certain rights of common were attached. The occupiers were restricted to a certain mode of cultivation highly inconvenient, which was a great obstacle to improvement. Most, perhaps all, of these divisions have been done away with by acts of inclosure.

Much of the land in Buckinghamshire being of a good quality, the farms are not in general very large; few are above 500 acres, and many do not exceed 20 or 30: the average may be taken at about 200 acres. The rent of arable land has fallen greatly of late years, and it might be difficult to state a general average. The poor-rates, till the introduction of the late new laws, were extremely various; and as in taking a farm the poor-rates and tithes are always taken into consideration, and the rent is proportionally less when these charges are high, it is best to include them in the annual value of the land when let. In this manner of reckoning, the farmer pays from 25s. to 40s. per acre for good arable land, of which the landlord receives from 15s. to 30s. Meadows let proportionally higher, especially those which are situated along the rivers and can occasionally be flooded at the option of the occupier. Leases for 7 and 14 years prevail, but most farms are let from year to year; and the tenants are seldom removed, provided they pay their rent and cultivate the land in a proper manner.

The ploughs and instruments of husbandry have been improved since the publication of the Agricultural Report. Although old-fashioned ploughs, drawn by four or even five horses in a line, are still occasionally seen on some of the stiffer soils, they have been considerably superseded by a better implement drawn by fewer horses. In very wet stiff soils the treading of the horses on the land already ploughed is very hurtful; and in these lands it is best to let the horses follow one another in the furrow.

Like the rest of England, Buckinghamshire once contained many common fields, laid out in narrow pieces, or *lands*, which did not admit of cross ploughing, and which were seldom or never straight. By being constantly ploughed towards the middle, these lands became at last so high and rounded, that if a man sat down in the furrow which divided them he could not be seen by another man in the next furrow, owing to the great height of the ridge between them. When these lands were inclosed and laid in regular fields, it took no little trouble to bring them to a regular form. This could only be done gradually; for the best soil being accumulated on the crown of the ridge, would, in levelling, have been buried in the furrows, leaving a barren subsoil exposed where the crown had been. The mode in which the most prudent improvers proceeded was to divide these large lands into smaller, throwing the crown of a narrow sitch into the furrow, or where the *baulk* had been, that is the narrow strip of ground which was generally left unbroken between the different lands as a boundary to each. Thus the ridge was gradually lowered, and the deep furrow filled up, until the land could be ploughed across the old furrows without much difficulty; after which new and straight ridges could be formed. The occasional application of the spade

greatly accelerated the improvement. A few of the old crooked ridges may still be seen on farms where the proprietors or the occupiers dread innovation. The object of high ridges where the soil is wet and impervious, is evidently to let the water run off; but a much better method is to underdrain the land up each furrow, which will take off the superfluous water more effectually. Narrow ridges, properly laid up, will keep any soil sufficiently dry when the underdrains prevent accumulations of water in the furrows. Water-furrows, judiciously deepened with the spade across the ridges, will often take all the water when there are no underdrains. When the lands are laid in a good form they may be kept so by alternately changing the crown and furrow, by which the soil is deepened and the surface kept level.

Buckinghamshire contained, according to the Report, about 150,000 acres of meadows and pastures, the management of which was then, as it is now, superior to that of the arable land. In the dairy districts are extensive pastures, which would be much improved by greater subdivision. Besides the advantage of ditches in draining a soil naturally retentive of moisture, and the shelter given to cattle and sheep by high banks and hedge-rows, it is ascertained that cattle frequently shifted thrive better than when they are kept a long time on the same pasture. In very large pastures there are always spots where the grass is sweeter, and eaten more closely, while in others it is left by the cattle to grow long and rank, and is consequently wasted and trodden down. In smaller divisions or inclosures the whole is more regularly eaten off; and the grass, not being bitten so close to the root, when left untouched for a time by the cattle being removed, grows better and of a finer quality. It is supposed that Buckinghamshire feeds about 20,000 milch cows, each giving on an average 200 lbs. of butter annually. The cows are chiefly short-horns, Glamorgan, and home-bred. On some lands none succeed so well as those which have been reared at home; on others it is said that cows brought from a distance thrive better. May not this be accounted for by the difference in the care with which they are bred and reared? Those who select a good stock to breed from, which experience has shown to suit the quality of the pasture, and keep the calves and heifers well till they come to the pail, will generally find it most advantageous to rear their own stock at home, so that they may be accustomed to the pasture; and, although cows thus reared may be more expensive than cows that are purchased, they will well repay the difference by their greater produce, and general condition when sold or fatted off. But unless great attention be paid to the selection both of the bulls and cows to breed from, the cheapest plan is to purchase cows of a good breed, with their first calf, bred upon land rather inferior in quality to that on which they are to be kept, so that they may not fall off from the change to a worse pasture.

The large Hereford oxen are preferred for grazing where the land is very good, from the notion that a large ox is more profitable than a smaller. A large ox when fat has, no doubt, more flesh, in proportion to the bone and offal, than a smaller, supposing both equally fat and well-shaped; but it is by no means proved that this flesh is produced by the same proportion of food. A small ox will fatten on inferior pasture and in a much shorter time than a larger. The return is therefore quicker and more certain, and there are experienced men who maintain that a small North Devon or a Scotch highland ox will give a better average profit on his cost and food, in a given time, than the larger breeds. The small Scotch oxen, which fatten so readily in English pastures, always bring the best price in the market, and there is never any difficulty in disposing of them.

Oxen are now much less frequently used in the plough than they were formerly in this county. The greater speed and general usefulness of the horse causes him to be preferred in spite of the pretended economy in the use of oxen.

Hay is the chief food of the cattle in winter, but turnips and straw begin to be substituted, notwithstanding the bad taste which turnips impart to the butter. This taste may be corrected, in some measure, by adding one-third part of warm water to the new milk, and putting a small piece of saltpetre in the cream.

No great quantity of cheese is made in this county, except a few cream cheeses in the neighbourhood of the principal towns.

The butter is chiefly sent to London made up in the form of oblong rolls weighing two pounds each. It is sent in baskets called from their shape *flats*, which hold from

20 to 40 rolls. Their depth is uniformly 11 inches. Each flat is marked with the initials of the dairyman who sends the butter, and the carrier who conveys it, to whom also the flat belongs; and the quantity contained in each flat is also marked upon it. The factor in London pays the carriage, and remits the amount of the sale once in the month.

In the dairy farms the calves are usually sold, when three or four days old, to dealers, who sell them again to those farmers who being within a moderate distance from London or any considerable town, find it more profitable to fatten calves by suckling them than to make butter. The calves fatten readily; but to make this business profitable veal should sell by weight at about half the price of butter. It often sells for much more.

Many ewes are kept in this county for the sake of early lambs for the London market. The Dorsetshire ewes, which have lambs very early in the season, are consequently preferred for this purpose. Where mutton is the object, the South Down breed is in greater request. The Gloucestershire and Leicester and a breed crossed between them have lately come into favour, especially since long wool has borne a better price in proportion to the quantity than the shorter and finer. On the Chiltern hills they buy two-thirds of wethers and one-third of ewes in autumn; the wethers are fatted on turnips, and the ewes, after their lambs are fat and sold off, are themselves fatted on grass the next summer.

The horses used for the plough and team are generally large and black; some of them are bred in the county, but most of them are brought when young by dealers from Northamptonshire and Lincolnshire. The largest and finest are frequently resold at six years old to London dealers for dray horses at a considerable profit. The mode of feeding horses is good and economical. They are soiled in the stable on green clover or tares in the summer; and in winter they have hay with cut straw and oats.

Hogs are an important appendage to a dairy farm. The favourite breed is the Berkshire, sometimes crossed with foreign breeds, as the Chinese or Neapolitan, or with the Essex and Suffolk breeds. The Neapolitan cross increases the aptitude to fatten, but renders the hog more delicate and susceptible of cold. The Chinese cross gives very delicate small porkers and sucking pigs. The quantity of pigs now introduced from Ireland has much diminished the profit on breeding this species of stock in this county.

There is a peculiar trade in this county, which is the rearing and fattening of ducks early in the season for the London epicures. The eggs are hatched under hens, and the ducklings are reared in the house with great care. Ducks six weeks old will in January fetch 12s. a couple. It is said that ducks to the value of 4000*l.* are sent annually from Aylesbury alone, and 20,000*l.* worth from the whole county.

The value of labour varies in different parts of Buckinghamshire, being generally in the inverse ratio of the poor rates; from 8s. to 12s. per week may be considered as the average wages. No beer or food is allowed except in harvest.

There are numerous fairs in Buckinghamshire, the principal of which are as follows:—

Amersham, Whit Monday, Sept. 25; Aylesbury, Friday after Jan. 18; Saturday before Palm Sunday, May 8, June 14, Sept. 25, Oct. 12; Beaconsfield, Feb. 13, Holy Thursday; Buckingham, Jan 12, March 6, Whit Thursday, July 10, Sept. 4, Oct. 4, Nov. 8; Burham, Feb. 25, May 1, Oct. 2; Chesham, April 21, July 22, Sept. 28; Colnbrook, April 5, May 3; Fenny Stratford, April 10, July 18, Oct. 11, Nov. 28; Ivinghoe, May 6, Oct. 17; Marlow, May 1, 2, 3, Oct. 29; Newport Pagnell, Feb. 22, April 22, June 22, Aug. 29, Oct. 22, Dec. 22; Olney, Easter Monday, June 29, Oct. 2; Risborough, May 6; Stony Stratford, Aug. 2, Oct. 11, Nov. 12; Wendover, May 12, Oct. 2; Winslow, March 20, Holy Thursday, Aug. 21, Sept. 22; Woburn, May 4, Nov. 12; Wycombe, Monday before Sept. 29.

Divisions, Towns, &c.—When the Domesday Survey was made, this county was divided into eighteen hundreds. They are now reduced to eight; one of them however still retaining the title of 'The Three Hundreds of Aylesbury.' We give the ancient and modern hundreds in a tabular form, noticing also their situation in the county.

Ancient Hundreds.	Modern Hundreds.
Rouelai Stodfald Lamua	nearly coincident with Buckingham (N.W.)

Ancient Hundreds.	Modern Hundreds.
Bonestou (Dunstow) Sigelai (Ségloe) Moleslou (Mulso) Elesberie (Aylesbury) Stanes (Stone) Riseberge (Risborough) Coteslau (Cotslow) Mureslai (Muresley) Erlai	nearly coincident with Newport (N.) ditto { The three hundreds of Aylesbury (Central.) ditto { Cotslow or Cottesloe (E.)
Easedene (Ashendon) Votedone (Waddesdon) Tichessele Dustenburgh Stoches Burnham	ditto Ashendon (W.) ditto Desborough (S.W.) ditto Stoke (S.E.) ditto Burnham (S.E.)

Desborough, Stoke, and Burnham are the three 'Chiltern Hundreds,' the stewardship of which is a well-known nominal office, bestowed upon a member of parliament who wishes to vacate his seat.

The number of parishes given by Camden is 185; Messrs. Lysons (*Magna Britannia*) compute them at 201, 'as nearly as can be ascertained,' including 8 which have parochial chapels dependent on other churches, and 2 whose churches were pulled down by Cornelius Holland, one of King Charles's judges, and have never been rebuilt. The number in the population return agrees with the total of Messrs. Lysons, viz. 201; but the chapelries are not distinguished. Several chapelries are indeed noticed in that return, but all as combined with or dependent upon one or other of the 201 pars. Some of the pars. have a very thin pop.; 16 have less than 100 inh., and of these 16, 5 have less than 40. Creslow has only 1 house and 5 inh.; and Tattenhoe only 2 houses and 13 inh. Portions of 5 pars. belonging to Oxon are included in this co.

Bucks has no city. The m. t. are 14. Aylesbury, as being one of the assize towns, the place where the quarter-sessions are always held, and the principal place of county election, has the best title to be considered as the county town. It is on a little stream which flows into the Thame. Pop. in 1831, 5021. Buckingham on the Ouse, in the N.W. part of the co., is the other assize town; pop., in 1831, 3610. The other m. t. are Great Marlow (pop. 4237) on the Thames; High Wycombe or Chipping Wycombe (pop. of the bor. 3198, of the whole parish 6299) on a small stream flowing into the Thames; Newport Pagnell (pop. 3385) at the junction of the Ousel with the Ouse; Agmondesham or Amersham (pop. 2816) on the road from London to Aylesbury; Olney (pop. 2344, exclusive of the inh. of a dependent hamlet) on the Ouse; Chesham (pop. of the par., including several dependencies, 5388) to the right of the Aylesbury road, not far from Amersham; Prince's Risborough (pop. 2122) to the left of the Aylesbury road, not far from Wendover; Wendover (pop. 2008) on the road from London to Aylesbury, beyond Agmondesham; Beaconsfield (pop. 1763) between Uxbridge and Wycombe; Stony Stratford (pop. 1619) on the Ouse; Winslow (pop. 1290) between Aylesbury and Buckingham; and Ivinghoe (pop. 578) between Dunstable and Wendover. [AMERSHAM, AYLESBURY, BEACONSFIELD, BUCKINGHAM, MARLOW (GREAT), NEWPORT PAGNELL, WYCOMBE (HIGH).] Of the less important of these places we shall subjoin a few particulars, as well as of Fenny Stratford and Colnbrook, which formerly had markets (now disused), and are consequently sometimes reckoned among the m. t.; and of a few other places, which have some claims to notice.

Chesham is a m. t., in the hund. of Burnham, to the right of the road from London to Aylesbury, 29 m. from London through Amersham, or about 26 through Watford and Rickmansworth. It has a market on Wednesday, and three fairs, April 21st, July 22nd, and September 28th. The living is a vicarage, in the gift of the duke of Bedford. The parish church, dedicated to St. Mary, is a large Gothic structure. There are four Dissenting meeting-houses, most of the inh. being Dissenters. There is an almshouse for four poor persons, endowed by Thomas Wedon, who died 1624; and a free school, or national school, for the education of the children of the poor.

The town is in a pleasant and fertile valley, watered by the Chess, a branch of the Coln. It consists of three streets. The pop. of the par. in 1831 was 5388; but from the vast extent of the par. (11,880 acres, 18 to 19 sq. m.), this furnishes little clue to the pop. of the town itself. The

chief trade of the place consists in making shoes for the London market: the females are employed in the manufacture of lace and straw plat. There are some paper-mills in the neighbourhood. Formerly considerable business was done in the manufacture of turnery and coarse wooden ware, but this branch of trade seems to have declined. Of the pop., 504 were employed in manufacture, trade, or handicraft.

Olney or Oulney is a m. t. on the N. bank of the Ouse, in the hund. and deanery of Newport; it is to the right of the great road from London to Chester and Holyhead, and is 55 m. from town. It has a market on Monday according to some of our authorities, or Thursday according to others; and three fairs, one on Easter Monday, one on June 29th, and one on October 21st. The living is a vic., in the patronage of the earl of Dartmouth. The town consists of one long street; the houses are built of stone, and the older of them are for the most part covered with thatch; but in consequence of a fire in 1786, in which 43 dwelling-houses, besides other buildings, were consumed, those of later erection are chiefly covered with tiles. The church, dedicated to St. Peter and St. Paul, is a spacious building, ornamented with a tower and a lofty stone spire, 185 ft. in height from the ground. There are meeting-houses for Quakers, Baptists, Independents, and Methodists. There are some almshouses. There is a bridge over the Ouse of four arches, besides several small arches extending over the meadows, which in winter are frequently flooded. To this bridge it is likely Cowper refers in the well-known lines,—

Hark! 'tis the twanging horn o'er yonder bridge,
That with its wearisome, but needful length,
Bestrides the wintry flood.

The pop. of the par., in 1831, was 2344, and 74 in the hamlet of Warrington: of the 2344, 201 were employed in retail trade or handicrafts. Lace-making was for a long time the chief employment of the inh.; of late silk weaving and the manufacture of hosiery have been introduced.

Olney was the residence of the poet Cowper. Moses Browne, author of 'Piscatory Eclogues,' was vicar of Olney; and the Rev. John Newton, an esteemed religious writer and popular preacher, was curate here during the residence of Cowper.

Prince's Risborough is a small town in the hund. of Aylesbury, about 37 m. W.N.W. of London, on a bye-road from High Wycombe to Thame. It has a market, formerly held on Saturday, but now on Thursday, but very little business is done; also a fair on the 6th of May. The town is supposed to have received its name from Edward the Black Prince, who had, according to the tradition of the inh., a residence here. A spacious moat, now dry, in a field adjoining the churchyard, is thought to surround the site of this house. The living is a perpetual curacy. The church, dedicated to St. Mary, contains some curious monuments; it has been lately enlarged. There are places of worship for Baptists and Methodists.

Wendover, in the hund. of Aylesbury, a parliamentary bor., disfranchised by the Reform Bill, is 35 or 36 m. from London, on the road to Aylesbury. It has a small weekly market, and two fairs, May 13 and October 2. The living is a vic., in the gift of the crown.

The pop., in 1831, was 2008 for the whole par., which is large, viz. 5250 acres. Lace-making and straw-plaiting furnish the chief occupation of the inh. The church, dedicated to St. Mary, is a little out of the town. There are in the town the remains of a chapel dedicated to St. John, long disused. There are two Dissenting meeting-houses, an endowed school, and a national school.

The celebrated John Hampden represented Wendover in five parliaments.

Stony Stratford is on the Ouse, in the hund. of Newport, 52 m. from London, on the parliamentary and mail-road to Holyhead; it is built also on the ancient Watling Street, along which it extends about a mile. The houses are built of free-stone, which was, in Camden's time, quarried at Caversham, in the neighbourhood. There is a church, that of St. Giles, on the S.W. side of the town, rebuilt in 1776: it exhibits a bad imitation of Gothic architecture. (Lysons's *Mag. Brit.*) On the N.E. side of the town is the tower of the former church of St. Mary Magdalen: the body of the church was destroyed in 1742, in a fire which consumed a considerable part of the town in ashes. The streets are partially paved, and not lighted. There is a stone bridge over the Ouse at the farther (i. e. N.W.) end of the town. Of the crosses erected by Edward I. at the places where

the corpse of his queen Eleanor of Castile rested on its way to interment in Westminster Abbey, stood in this town, but it was demolished in the great civil war. There was in remote times an hospital of St. John. There are Independent, Baptist, and Wesleyan meeting-houses in the town, or very near it. There are a national school and two large Sunday schools, in which the children of the poor are taught the rudiments of education.

It has been supposed by Camden and others that the Lactorodum or Lactorodum of the Itinerary of Antoninus was at or near Stony Stratford; and Camden supports his opinion by urging the similarity of the meaning of Lactorodum (from the Celtic *lloch*, a stone, and *ri* and *ryd*, a ford) to that of Stratford. In the map of Ancient Britain, published by the Society for the Diffusion of Useful Knowledge, Lactorodum is fixed at Towcester. It was in this town that Richard III. possessed himself of the person of the unhappy Edward V. and arrested Sir Thomas Vaughan and the Lord Richard Grey.

The market is on Friday, and there are three fairs, viz. on August 2nd, October 11th, and November 12th. There was till of late years a fourth fair, held in April, but this has been discontinued. The only manufacture is that of lace. Carlisle (*Top. Dict. of Eng.*) fixes the October fair on the Friday before the 10th; the others on the Friday after.

Winslow is in Cotslow hund., on the road from Aylesbury to Buckingham, 49 m. by the road through Tring, and 10 m. through Amersham. It is a neat town on the brow of a hill, commanding several fine prospects. It consists chiefly of three streets, composed of brick-built houses. The church, dedicated to St. Lawrence, is a large pile of building, with a square embattled tower at the W. end. The living is a vic., in the gift of the crown. The market is very small, and is held on Thursday; and there are five fairs in the year, March 20th, Holy Thursday, August 21st, September 22nd, and the Thursday before October 11th. There are Baptist, Independent, and Wesleyan meeting-houses; and a small endowed school for 20 boys. (*Rep. of Comm. of Charities.*) The white poppy has been cultivated in the neighbourhood for making opium. Some lace is made at Winslow.

Ivinghoe is in Cotslow hund., 33 m. N.W. of London, just under the N.W. slope of the chalk range. It has a very small market on Saturday; and two fairs, May 13 and October 17th. The church, dedicated to St. Mary, is a handsome Gothic building. There is an ancient altar-tomb on the N. side of the chancel; it has been disputed whether this was the tomb of Henry, bishop of Winchester, brother of King Stephen. The living is a vic., and was in the gift of the late earl of Bridgewater. The par. of Ivinghoe is extensive, and has several dependent hamlets: the pop. of the whole was, in 1831, 1648. Berrysted house, in the par., now a farm-house, is said to have been the seat of Henry, bishop of Winchester.

Some straw plat is made in Ivinghoe. The manor of Ivinghoe, according to tradition, once belonged to the family of Hampden; but one of this family, having had a dispute with the Black Prince, was dispossessed of the manor either by way of fine or composition. The lines which embelish the tradition are thus given by Gough in his *Additions to Camden*.

Hamden of Hamden did forego
The manors of Tring, Wing, and Ivinghoe,
For striking the Black Prince a blow.

Messrs. Lysons have set aside this tradition, by finding that neither of these three manors was ever in the Hampden family.

The following two places once had markets, but they are now discontinued.

Fenny Stratford is in Newport hund., on the great Holyhead road, 45 m. from London, and about 7 from Stony Stratford. It is a chapelry dependent upon the parish of Bletchley. The chapel was rebuilt in 1724—1736, chiefly through the exertions of the antiquary Browne Wilks, and dedicated to St. Martin. Willis himself is buried with the rails of the communion-table. The market was on Monday while it continued: there are four fairs, April 14th, July 18th, October 10th or 11th, November 28th. Fenny Stratford, like Stony Stratford, is on the Watling Street. There is a stone bridge over the Ousel, which flows by the town. Pop. of the chapelry, in 1831, 635.

In 1665 Fenny Stratford was much depopulated by the plague. There are Baptist and Wesleyan Methodist places

of worship, and a national school. Fenny Stratford gets its name from the nature of the surrounding country: it is itself on a hill.

Some fix the *Magiovinum* of Antoninus at Fenny Stratford.

Colnbrook is on the high western road, 17 m. from London, in the hund. of Stoke, and in the three pars. of Langley, Horton, and Iver, (Bucks.) except a small part which is in the par. of Stanwell, Spelthorne hund., co. of Middlesex. The town consists of one long street of neat respectable-looking houses. The Coln here flows in four channels, crossed by as many bridges; and from this circumstance, combined with the agreement of its distance from London, Camden and others are inclined to regard it as the *Pontes* of the Itinerary of Antoninus; but in the map of Antient Britain, published by the Society for the Diffusion of Useful Knowledge, *Pontes* is fixed at Staines. An antient chantry chapel at Colnbrook, which continued to be used after the Reformation, was endowed by private benefaction in 1682. This old chapel, which was in Langley parish, has since been pulled down and rebuilt on a different site in the parish of Horton. The market was on Tuesday. There are still two fairs, on the 5th of April and 3rd of May. The town was incorporated in 1543, by the style of the bailiff and burgesses of Colnbrook.

The following places had charters for markets, which have been long ago disused:—Bidlesden or Biddlesdon, on the border of Northamptonshire; Little Brickhill, near Fenny Stratford; Burnham, between Colnbrook and Maidenhead; Crendon and Haddenham, on the border of Oxfordshire, near Thame; Hambleton, near Marlow; Hanslope, near Stony Stratford; Great Harwood and Hoggeston, near Winslow; Iver, between Colnbrook and Uxbridge; Laverden or Lavendon, near Olney; Linchlade, on the border of Bedfordshire, near Leighton Buzzard; Muresley, near Winslow; Snelshall, in Whaddon parish, between Stony Stratford and Winslow; Tingewick, near Buckingham; Whitchurch, between Aylesbury and Winslow; and Wormenhall, on the border of Oxfordshire, near Thame.

Brill, on the border of Oxfordshire, near Thame, is now a vil.; pop. in 1831, 1283; but it is said with much probability that the Saxon kings had a palace here, which was a favourite residence of King Edward the Confessor. It is certain that King Henry II. kept his court here in 1160, attended by Thomas à Becket as his chancellor; he was there again with his court in 1162. . . . Henry III. kept his court at Brill in 1224 (*Lysons's Magna Brit.*). In the war between Charles I. and his parliament, Brill and Borstall, a neighbouring vil. (pop. in 1831, 268), were made garrisons by the royal party.

Burnham, between Colnbrook and Maidenhead, a little to the right of the high western road, has been already noticed as having been once a m. t. It had a monastery of Augustine nuns. The manor of Chippenham in this par. was one of the demesnes of the crown, and the Mercian kings are said to have had a palace there. There was a palace certainly in the 13th century, for Henry III. occasionally resided at it. Pop. in 1831, 2137.

Chalfont Saint Giles, on the road to Amersham, is the place where Milton finished his 'Paradise Lost'; here, too, he is said to have had the idea of his 'Paradise Regained' suggested to him by his friend Elwood the quaker. The house in which he resided was, when Messrs. Lysons wrote, occupied by a farmer. Here is a school endowed by Sir Hugh Palliser, who is buried in the parish church; and at Chalfont St. Peter, close by, is a school supported by the Portland family. Pop. of Chalfont St. Giles, 1297; Chalfont St. Peter, 1416.

Hambleton (pop. in 1831, 1357), near Marlow. Greenland house, near this vil., the seat of the Doyleys, was a severely contested post in the war between Charles I. and the parliament.

Hampden (pop. in 1831, 286), near Prince's Risborough. The manor was for centuries in the Hampden family, the male line of which became extinct in 1754. The celebrated John Hampden lies buried in the churchyard; and there is a representation of the battle of Chalgrave field, in which he received his death-wound in 1643, on the monument of John Hampden, Esq., the last heir male of the family. Hampden house, the former seat of the Hampdens, contains several family pictures, but the individuals whom they represent are unknown. There is a whole-length portrait of Oliver Cromwell.

Great Missenden, between Amersham and Wendover, was the seat of a rich abbey of the canons of St. Austin. Some part of the conventual buildings remain. The par. church is a handsome Gothic building. Pop. in 1831, 1827.

Pitston, antiently Pightelsthorpe (pop. in 1831, 578), near Ivinghoe. In this par. was the rich abbey of Asheridge. The abbey, for some time after the dissolution of the community, was a royal palace; and Queen Elizabeth, before her accession, frequently resided here. Part of the conventual buildings remained till the present century; they were nearly all pulled down by the then possessor, the late Duke of Bridgewater.

Edward I. spent his Christmas at Asheridge, either at the monastery or at the neighbouring castle of his cousin, Edmund earl of Cornwall, son of Richard king of the Romans, A. D. 1290. He held a parliament there at the same time.

Stoke Poges lies to the right of the road between Colnbrook and Maidenhead. Pop. in 1831, 1252. The manor was in the reign of Queen Elizabeth seized by the crown for a debt. It was the residence for a time of 'the grave Lord Keeper,' Sir Christopher Hatton; and subsequently of Sir Edward Coke, who in 1601 entertained Queen Elizabeth here, and presented her with jewels to a considerable amount. Upon the death of Sir Edward Coke, to whom the manor had been granted in fee, it came to his son-in-law Lord Purbeck. The manor-house afterwards came into the possession of the Penn family, by one of whom the old house was pulled down and re-built. The park is adorned by a colossal statue of Sir Edward Coke, and a sarcophagus on a pedestal has been erected in its vicinity to the memory of the poet Gray.

The old manor-house of Stoke Poges is the scene of Gray's 'Long Story;' and the churchyard of his well-known 'Elegy.' The poet spent much of his youth in this vil.; and his remains lie (without any monumental inscription over them) in the churchyard, under a tomb which he had erected over the remains of his mother and aunt.

At Stowe, near Buckingham, is the seat of the Duke of Buckingham. The grounds were originally laid out in straight paths and avenues, and adorned with canals and fountains. Subsequent improvements have been made under the direction of Bridgman, Kent, and other artists and amateurs; and the beauties of Stowe have been commemorated by Pope and West, who spent many festive hours with the then owner Lord Cobham. The grounds, when beheld from a distance, appear like a vast grove, interspersed with columns, obelisks, and towers. They are adorned with arches, pavilions, temples, a rotunda, a hermitage, a grotto, a lake, and a bridge. The temples are adorned with busts, under which are suitable inscriptions. The house was originally built by Peter Temple, Esq., in the reign of Elizabeth; it was re-built by Sir Richard Temple, who died in 1697, and has been enlarged and improved since. The whole front extends 916 ft., the central part 454. This mansion contains a valuable collection of paintings; among them are the portraits of Martin Luther, by Holbein; Oliver Cromwell (said to be original), by Richardson; Pope, by Hudson; Charles I. and his queen Henrietta, by Vandyke; Addison, by Kneller; Lady Jane Gray, Camden the antiquary, and others. Pop. in 1831, 490.

Water Stratford, near Buckingham, was the scene of a singular delusion in the latter part of the 17th century. Mr. John Mason, the rector, a man of sincere and fervent piety and irreproachable character, fell, towards the close of his life, into a delusive notion that he was appointed to proclaim the second advent of the Saviour. Many believed on him, left their homes, and resorted to Water Stratford, in consequence of his declaration that 'the Lord Jesus would appear at Water Stratford, and come and judge the world on the Whit-Sunday following.' In the midst of the excitement thus caused Mr. Mason died, having before his death foretold that he should rise from the dead after three days, and ascend with his body to heaven. Before the three days were expired the body was buried; but strange to say, several of his followers declared that he had risen, and that they had seen him and spoken with him; nor was the delusion dissipated, when, after some time, the grave was opened and the body exposed to public view. These strange events occurred about 1693 or 94, and the sect did not become wholly extinct until 1740. Pop. in 1831, 186.

Taplow, on the banks of the Thames, nearly opposite to Maidenhead, may just be mentioned for the sake of noticing

Taplow Court, the seat of the marquis of Thomond; and the former mansion of Cliefden House, destroyed by fire in 1795. This magnificent house was begun by the witty and profligate duke of Buckingham, and was for some time the residence of Frederick Prince of Wales, grandfather of the present king.

Slough, near Windsor, was for many years the residence of Sir William Herschel, and the place where he constructed his large reflecting telescope. He died here in 1822.

Weston Underwood, near Olney, was for some years the residence of the poet Cowper; and some of his descriptions of rural scenery were drawn from nature in his walks round this place.

Divisions for Ecclesiastical and Legal purposes.—Of the 201 pars. 79 are vics., and 29 curacies or donatives. The co. is for the most part in the diocese of Lincoln, and in the archdeaconry of Buckingham. Two pars., according to Browne Willis (*History and Antiquities of the Town, Hundred, and Deanery of Buckingham*), four according to Messrs. Lysons (*Magna Britannia*), are in the peculiar jurisdiction of the Archbishop of Canterbury; and four others are included in the diocese of London and archdeaconry of St. Alban's. The several pars. of the co. are divided among the seven rural deaneries of Buckingham, Burnham, Muresley, Newport, Waddesdon, Wendover, and Wycombe.

Buckinghamshire is in the Norfolk circuit: the Lent assizes are held at Aylesbury, the summer assizes at Buckingham, and the quarter-sessions for the co. at Aylesbury, where also is the co. gaol.

The co. returns three members to parliament, one having been added by the Reform Bill. Aylesbury is the chief place of the co. election, the members being nominated there, and the return announced: the polling places are Aylesbury, Beaconsfield, Buckingham, and Newport Pagnell. Two members are returned for the hund. of Aylesbury (the right of voting for the bor. of Aylesbury having, in consequence of the corruption of the scot and lot voters, been thrown open to the freeholders of the hund.), and two each for the bors. of Buckingham, High Wycombe, and Marlow. The whole number of members returned for the co. itself and places within it is eleven. It lost four members by the Reform Bill, Amersham and Wendover, each returning two members, having been disfranchised.

Civil History and Antiquities.—Camden and most other antiquaries have included Buckinghamshire, and probably with good reason, in the territory of the Catyuechiani or Catuellani. This people they consider to be identical with the Cassii, and to have been the subjects of Cassivellaunus, who headed the confederate forces of the Britons against Julius Cæsar. It may be justly doubted, we think, whether the Cassii and the Catyuechiani were the same people. [BRITANNIA.]

When the Romans, under the command of Aulus Plautius, in the time of the Emperor Claudius, seriously undertook the conquest of Britain, it has been considered by some that Buckinghamshire was the seat of conflict, and that in a battle within its borders, Togodumnus, one of the British chieftains, was slain. It is not unlikely that this co. was crossed by the Britons in their retreat towards the Severn, and by the pursuing Romans; but we have no data for fixing any conflict of importance within its borders. The death of Togodumnus occurred, it is more likely, in the marshes of Essex, near the mouth of the Thames. When South Britain was subdued by the Romans and divided into provs., Buckinghamshire was included in Flavia Cæsariensis.

Several of the antient British and Roman roads crossed this county. The 'Watling Street' coincides with the parliamentary and mail road to Holyhead in that part of it which runs from Brickhill to Stony Stratford through this county. No traces however of the 'Watling Street' itself remain, although the line of its direction is undisputed. The 'Ikening' or 'Ikeneld Street' runs along the edge of the Chiltern hills, and a road runs nearly parallel to it under the hills, called by the country people 'the lower Acknell way.' The 'Akeman Street' crossed this county also, but its direction is uncertain. A Roman road, coinciding with part of the turnpike-road from Bicester (Oxon) to Aylesbury, may have part of a road leading from Alcester to Londinium (on), or Verolamium: and another Roman road is thought to have passed by Water Stratford and Stow in the hund. of Towcester. Of Roman stations some notice has already been taken. The 'Magiovirtum' of Antoninus

may be at Fenny Stratford; Lactodorum, which Camden fixes at Stony Stratford, and Pontes, which he fixes at Colnbrook, are placed by more modern antiquaries at stations beyond the limits of Buckinghamshire; viz., Lactodorum, at Towcester in Northamptonshire; and Pontes, at Staines in Middlesex. There are several antient camps or earth-works in the county, chiefly near the edge of the Chilterns, or the course of the Thames: there is an earth-work at Ellesborough, on the ridge of the Chilterns, in one corner of which is a high circular mound or keep, 80 paces in circumference, called 'Castle Hill,' or 'Kimble Castle.' The name of the adjacent vill. of Kimble (Great and Little) was written in antient records Kynebel or Cunobel.

In the civil wars under Stephen and under John, Buckinghamshire was the scene of contest, but not of any marked event. Hanslope castle, near Stony Stratford, held for the barons against John by its owner, was taken by the king's favourite, Fulk de Brent, A. D. 1216 or 1217.

In the great civil war between Charles I. and his parliament, the vil. of Brill was garrisoned by the king. Upon this garrison the parliamentary forces under Hampden made some unsuccessful attempts. Aylesbury seems at this time to have been held by the parliament. In 1643 the parliamentarians under the Earl of Essex were quartered at different places in the county. Prince Rupert attacked by surprise their quarters at Wycombe and another place, and took several prisoners, with which he retired to Oxford. The opposite party pursued him in his retreat; and it was in a skirmish which took place on this occasion that Hampden received his death-wound. He lingered in great pain for three weeks and then died. In 1644 the king had his head-quarters at Buckingham. In the same year Boscawen's house in this county, 'reputed a strong place,' says Lysons, was abandoned by the royalist party, who thought it right to withdraw those garrisons that were too far distant from Oxford.

This county is not by any means rich in antiquities. Of the few British or Roman remains, some notice has been already taken. Of the baronial castles of the feudal age there are no remains; some earth-works alone serve to mark the sites of those at Lavendon, near Olney, and Watlington church, between Aylesbury and Buckingham; and Hanslope Castle, Castlethorpe, near Stony Stratford.

The remains of the buildings belonging to the various religious establishments are but scanty. There are some very small remains of Burnham abbey and Medmenham abbey. Of Missenden abbey, part of the cloisters remain, having groined arches resting on pillars, with enriched capitals in the latest Saxon (or Norman) style. Some part of the cloisters of Ashridge monastery escaped destruction by accident, when the other conventual buildings were pulled down by the duke of Bridgewater. There are more considerable remains of Nutley abbey, which is now converted into a farm. The buildings occupy three sides of a quadrangle. On the S. side is the hall, 68 ft. long by 20 ft. (nearly) wide, now used as a barn: the style of this building appears to be the early English. On the W. side are the buildings of the farm-house, in the later English style: some part was probably built after the dissolution. Part of the monastery of Muresley (or St. Margaret), in the hund. of Ivinghoe, is yet standing, and is used as a dwelling-house. (Lysons's *Magna Britannia*.)

Of the churches of early date, Stewkley, between Winslow and Leighton Buzzard (Bedfordsh.), is the most remarkable. It has usually been cited as a Saxon church, although it does not appear to be any real evidence of its erection before the Conquest, and it has nothing to distinguish it from other churches erected after that time. It is a good Norman structure; no part of it has been altered internally or externally, nor materially defaced. The porch on the S. side and the pinnacles of the short square tower, which is between the nave and chancel, have been added since its erection. (Lysons; Rickman's *Gothic Architecture*.)

At Hitohenden, near High Wycombe; Stantonbury, near Stony Stratford; Upton, near Colnbrook; Watlington, near Buckingham; and Dinton, near Aylesbury, the churches have some portions of Norman architecture.

Chetwode church, near Buckingham, formerly the chapel of the priory of Austin Canons, may, from the style of its architecture, be considered as coeval with the foundation of the priory, A. D. 1244. This church contains some of the most antient and elegant specimens of stained glass to be found in the kingdom. Hillesden church, rebuilt in the

affords a rich example of the style of a later age; it has some good perpendicular parts. (Lysons; Rickman.)

Education.—The number of schools and scholars in the county, according to the returns made to the House of Commons in 1835, was as follows:—

	Schools.	Scholars.	Total.
Infant Schools	34		
Number of children from 2 to 7 years:—			
Males		161	
Females		158	
Sex not specified		450	
			769
Daily Schools	386		
Number of Children from 4 to 14 years:—			
Males		4889	
Females		3187	
Sex not specified		1989	
			10,065
	Schools	420	
Total of Children under daily instruction			10,834
Sunday Schools	294		
Number of Children from 4 to 15 years:—			
Males		7198	
Females		8566	
Sex not specified		4964	
			20,728

Maintenance of Schools.

Description of schools.	By endowment.		By subscription.		By payments from scholars.		Subscrip. and payment from scholars.	
	Schols.	Scholars.	Schols.	Scholars.	Schols.	Scholars.	Schols.	Scholars.
Infant Schools	—	—	3	291	26	306	5	249
Daily Schools	48	1717	26	1,266	269	5195	33	1787
Sunday Schools	9	640	271	19,265	2	52	18	581
Total	57	2657	310	20,842	297	5553	50	2610

Schools established by dissenters included above.
 Infant and other daily schools 3, containing 42 scholars.
 Sunday schools 107, " 8660
 Forty-eight boarding schools are included in the 386 daily schools.

The increase of schools since 1818 has been—
 Infant and other daily schools 124, containing 3,635 scholars.
 Sunday schools 138, " 12,426 "

There are twenty-four lending libraries of books attached to schools in Buckinghamshire.

Statistics.—Population. As an agricultural county, Buckinghamshire ranks the seventh among the English counties. Of 35,504 males, 20 years of age and upwards, residing within the county in 1831, the large proportion of 19,348 were engaged in cultivating the soil. Only 369 were employed in manufactures or in making machinery, out of which number 76 were occupied in paper-making, 131 in tanning at the town of Buckingham; the remainder were engaged in making agricultural implements, in silk-weaving, and other works upon a small scale. The centesimal proportions as to occupations into which the inhabitants of the county were divided at the enumerations of 1811, 1821, and 1831, were as follows:—

	Families in 100.		
	1811.	1821.	1831.
Employed in Agriculture	55·3	57·6	53·0
Trade, manufactures, &c.	33·4	29·8	26·4
Other Classes	11·3	13·6	20·6

The following summary, containing an abstract of the answers obtained under the Act for taking an account of the Population in 1831, will exhibit the situation, in that respect, of each hundred, &c., in the county, in the month of May in that year:—

HUNDREDS, &c.	HOUSES.				OCCUPATIONS.				PERSONS.			Males twenty years of age and upwards.
	Inhabited.	Families.	Building.	Uninhabited.	Families chiefly employed in agriculture.	Families chiefly employed in trade, manufactures, and handicraft.	All other families not comprised in the two preceding classes.	Males.	Females.	Total of persons.		
Ashendon Hundred	2,556	2,819	17	60	2,001	527	291	6,506	6,427	12,933	3,210	
Aylesbury	3,516	3,978	19	92	2,685	822	471	9,030	9,383	19,413	4,503	
Buckingham	2,062	2,284	16	39	1,685	340	259	5,156	5,344	10,500	2,614	
Burnham	3,592	4,138	15	129	1,693	1,380	1,065	9,284	9,782	19,066	4,504	
Cottesloe	3,283	3,774	10	67	2,633	734	407	8,595	8,840	17,435	4,221	
Desborough	3,953	4,459	23	140	1,583	1,583	1,293	10,032	10,762	20,794	4,857	
Newport	5,155	5,716	18	116	3,144	1,404	1,168	11,769	13,119	24,888	6,070	
Stoke	2,342	2,902	3	99	1,203	896	803	7,219	6,650	13,869	3,371	
Aylesbury Borough	990	999	7	41	138	447	414	2,471	2,550	5,021	1,321	
Buckingham	710	780	6	24	128	262	390	1,672	1,938	3,610	833	
Totals	28,159	31,849	134	807	16,893	8,395	6,561	71,734	74,795	146,529	35,504	

HUNDREDS, &c.	AGRICULTURE.			Employed in manufacture or in making manufacturing machinery.	Employed in retail trade or in handicraft workmen.	Capitalists, bankers, professional and other educated men.	Labourers employed in labour not agricultural.	Other males twenty years of age (except servants).	MALE SERVANTS.		Female servants.
	Occupiers employing labourers.	Occupiers not employing labourers.	Labourers employed in agriculture.						Twenty years of age.	Under twenty years of age.	
Ashendon Hundred	349	37	2,025	24	493	33	58	137	54	94	300
Aylesbury	340	120	2,299	8	874	95	376	280	111	94	334
Buckingham	251	23	1,695	1	378	51	44	111	60	57	266
Burnham	185	37	1,892	70	1,300	187	520	156	157	123	586
Cottesloe	373	66	2,578	5	679	78	160	210	72	85	349
Desborough	165	58	1,717	64	1,667	201	561	305	119	59	588
Newport	362	69	2,831	29	1,579	186	468	378	168	132	665
Stoke	97	38	1,300	34	924	197	517	93	171	48	699
Aylesbury Borough	7	—	209	9	510	101	371	75	39	61	248
Buckingham	23	5	197	125	200	47	138	75	23	19	139
Totals	2,152	453	16,743	369	8,604	1,176	3,213	1,820	974	702	4,174

The population of this county at each of the decenary enumerations made in the present century was as follows:—

	Males.	Females.	Total.	Inc. per cent.
1801 . . .	52,094	55,350	107,444	
1811 . . .	56,208	61,442	117,650	9.70
1821 . . .	64,867	69,291	134,068	13.93
1831 . . .	71,784	74,708	146,492	9.29

The increase in 30 years is thus shown to have been 39,085 persons, or 36½ per cent; the increase in the whole of England during the same period having been 37 per cent.

At the census of 1821 an attempt was made to ascertain the ages of the people, and this experiment proved more successful in Buckinghamshire than in many other parts, the ages of more than 98 in 100 of the inhabitants having been returned: they were as follows:—

	Males.	Females.	Total.
Under 5 years of age	9,573	9,538	19,111
From 5 to 10	8,522	8,763	17,285
10 " 15	7,822	7,153	14,975
15 " 20	6,469	6,710	13,179
20 " 25	5,861	5,206	11,067
25 " 30	5,896	5,889	11,785
30 " 35	5,825	5,579	11,404
35 " 40	4,468	4,717	9,185
40 " 45	3,198	3,247	6,445
45 " 50	1,713	1,822	3,535
50 " 55	448	478	926
55 " 60	30	32	62
60 and upwards	..	..	..

Total of ages ascertained 63,617 Males, 68,137 Females, 131,754

The pop. of the co., exclusive of the four parliamentary boroughs—Buckingham, Wycombe, Aylesbury, Great Marlow—was, according to the census of 1831, 125,437, leaving 21,092 as the pop. of the four boroughs. The proportions of electors for the co. to the gross pop. of the co. were, in 1832, 1 to 23.65, and in 1833, 1 to 26.25. In the boroughs taken together the proportions were in 1832, 1 in 7.78, and in 1833, 1 in 8.08.

Roads.—It appears from a return made to a committee of the House of Lords in 1833 that the extent of turnpike roads within the county of Buckingham, in the year 1829, was 165 miles. The management of these roads was then conducted by 13 different sets of trustees under the provisions of 23 Acts of Parliament. The sum annually expended in repairs averaged 15,251*l*.

Poor Rates.—The sums expended for the relief of the poor at each of the four decenary years of enumeration, and in each of the three years following 1831, were:—

1801 . . .	86,155 <i>l</i> , or at the rate of 16 <i>s</i> . 0 <i>d</i> . for each inh.
1811 . . .	133,944 <i>l</i> " 22 <i>s</i> . 9 <i>d</i> . "
1821 . . .	117,477 <i>l</i> " 17 <i>s</i> . 6 <i>d</i> . "
1831 . . .	137,356 <i>l</i> " 18 <i>s</i> . 8 <i>d</i> . "
1832 . . .	144,587 <i>l</i> " 19 <i>s</i> . 4 <i>d</i> . "
1833 . . .	132,937 <i>l</i> " 17 <i>s</i> . 7 <i>d</i> . "
1834 . . .	124,200 <i>l</i> " 16 <i>s</i> . 2 <i>d</i> . "

Real Property.—The estimated annual value of real property within the county assessed for the property-tax in 1815, was 644,130*l*.

Local Rate.—The total sum raised within the county for local purposes in the year ending 25th March, 1834, was 153,040*l*. 6*s*. The expenditure was—

For the relief of the poor	£124,200 4 0
In suits of law, removal of paupers, &c.	3,140 8 0
For other purposes	25,645 19 0
	£153,040 11 0

The sums raised and expended in the two previous years ending 25th March, were—

	1832.	1833.
Sums levied . . .	£173,393 1 0	£159,786 11 0
Expended—		
For relief of the poor	144,587 17 0	132,937 12 0
For labour in repairing roads, &c.	15,623 4 0	
In suits of law, &c.		3,515 0 0
For other purposes	12,074 0 0	24,708 0 0
	£172,285 1 0	£161,160 12 0

• Not separately stated this year.

The assessment of 1833, the only year for which such particulars are given, was collected from the owners of various descriptions of property, as follows:—

On land	£136,223 18 0
" dwelling-houses	20,429 9 0
" mills, factories, &c.	2,302 6 0
" manerial profits, navigations, &c.	828 16 0
	£159,786 11 0

The county expenditure for various purposes in the year 1833, the latest of which any return has yet been made, was:—

For bridges and roads leading to them	£3,623 9 3
" gaols	339 12 0
" expenses of criminals tried at quarter-sessions	944 7 4
" " " at assizes	940 6 11
" expenses of coroners	142 4 6
" " militia	25 2 6

Crime.—The number of persons tried at the assizes and sessions for criminal offences committed within the county in the three septennial periods ending with 1820, 1827, and 1834, were 548, 906, and 1358 respectively, being an annual average of 78 for the first, of 129 for the second, and 194 for the last septennial period. We have no information concerning the nature of the crimes committed except for the year 1834, when the number of persons charged with offences was 232. Of these, 29 were accused of crimes against the person, 27 of offences against property committed with violence, 133 of offences against property without violence, 7 of malicious offences against property, 3 of uttering base coin, 1 of perjury, and 32 of simple breaches of the peace. Of the persons brought to trial 67 were acquitted, and 165 were convicted. Of these 1 was executed, 24 were transported for life, and 20 for terms of years, 116 were imprisoned for various periods, all except 9 for less than 6 months, 1 was publicly whipped, and 3 were fined and discharged.

Of the persons tried, 218 were males and 14 females; their ages were—

	Males.	Females.
14 years and under	8	0
From 12 to 16 years	11	0
" 15 to 21 "	86	6
" 21 to 30 "	74	2
" 30 to 40 "	28	2
" 40 to 50 "	7	3
" 50 to 60 "	4	0
Above 60	3	1
Age not ascertained	4	0
	218	14

The proportion of offenders to the population was 1 to 682. The centesimal proportions in which crimes of the various classes were committed were—

Offences against the person	12.30
" " property with violence	1.64
" " " without violence	57.32
Malicious offences against property	3.62
Forgery and offences against the currency	1.11
Other offences	14.01
	100

The number of persons committed to the county gaol in the course of 1834 was 702, including debtors and persons charged with minor offences, who were summarily dealt with by the local magistrates. Among the number of offenders there were 35 who were known to have been committed before—15 of them once, 7 twice, 8 three times, and 5 four and more times; the cases of sickness in the year were 14 and of deaths among the prisoners 6.

Savings-Banks.—There are four savings-banks in Buckinghamshire—at Aylesbury, Buckingham, High Wycombe, and Newport Pagnell. The number of depositors and amount of their deposits in each of the three years ending 20th November, 1832, 1833, and 1834 were as under:—

	1882.		1883.		1884.	
	Deposits.	Deposits.	Deposits.	Deposits.	Deposits.	Deposits.
Not exceeding 50	1465	4	1528	4	1878	4
50	649	10,000	681	11,409	706	11,548
100	284	20,000	289	41,811	404	24,814
150	106	30,000	114	50,551	136	30,780
200	30	12,469	37	13,528	41	15,101
Above 200	15	5,113	13	6,083	11	6,532
		8,266		8,267		8,536
	2570	79,791	3676	76,631	2339	81,067

BUCK'S-HORN. [RHUS.]

BUCKTHORN. [RHAMNUS.]

BUCK-WHEAT (*Polygonum fagopyrum*) is said to be found wild in Persia. The cultivation of it, according to some authorities, was introduced into Europe by the crusaders; according to others, the Moors introduced it into Spain from Africa; and hence it has in France the name of *bled sarasin*. The name of buck-wheat is a corruption of the German *buch-weizen*, which signifies beech-wheat, from the resemblance of the seed to that of the beech-tree. It is called wheat, because, when ground, it produces a fine farina, which resembles that of wheat in appearance. The botanical name of the genus, *Polygonum*, is taken from the angular form of the seed, and the specific name, *fagopyrum*, from its resemblance to beech-mast. Buck-wheat grows with a strong herbaceous, cylindrical, and branching stem of a reddish colour, about 2 feet high. The leaves, which are ivy-shaped, are placed alternately on the stems. The flowers grow in panicles at the end of the branches, and are succeeded by black angular seeds, formed of four triangles, being thus nearly regular tetrahedrons. The plant is an annual, and the flowers appear very soon after it is out of the ground. They continue to blow and bear seed in succession till the frost destroys the plant. Being a native of a warm climate, the smallest appearance of frost in spring, while the plant is tender, entirely destroys it. Hence it is never sown in northern climates till all danger of frost is over, which in many parts of England is not till the middle of May; but its growth is so rapid, that it may be reaped in September, at which time the principal part of the blossoms will have ripened their seeds. No advantage would be gained by leaving it longer on the ground, for even if the frost did not kill the whole plant, the earliest ripened seeds would be shed and lost; and the last blossoms would not produce perfect seeds.

The cultivation of buck-wheat has never been very extensive in the variable climate of Britain. It is not so well adapted to cold wet soils as to warm sands; nor is it so certain a crop as oats or barley on lands which are suited to the growth of these grains. For countries where there are very poor light lands with a hot dry climate, unfavourable to the growth of oats, and not rich enough for barley, buck-wheat is a great resource; and without it, many tracts of poor land would scarcely be capable of supporting a population. As a principal crop, therefore, it is confined to some parts of the south of France and other countries similar in soil and situation. As a secondary and occasional crop, it often occurs in Switzerland, Germany, and especially in Flanders, where it enters as a regular part of their varied and complicated rotations. Under particular circumstances, it might be introduced with advantage into many parts of England where it is now unknown. The only counties in which it is cultivated to a moderate extent at present are Norfolk and Suffolk, where it is called *brusk*. If a small patch of buck-wheat is occasionally met with elsewhere, it is, in general, mainly for the sake of encouraging game, particularly pheasants, which are extremely fond of it.

When buck-wheat is cultivated as a regular part of a rotation, it is generally after the land has been considerably exhausted by former grain crops, and manure cannot be had in sufficient abundance to recruit it. It will produce a better return than oats, and leave the land in a better state, especially in warm and dry seasons. On richer and better soils it may be occasionally a good substitute for barley, when the land cannot be properly cleaned and tilled sufficiently early in spring; for it allows a full month more to prepare the ground; and in this one month, if it be hot and dry, a good tillage may produce nearly all the advantage of a summer fallow. Buck-wheat, on good land, will produce

nearly as valuable a crop as barley, though it is certainly more precarious; the seeds sown with it will probably produce more grass or clover than they would if sown with barley; for buck-wheat, sown thin, as it always should be in this case, does not choke the grass, but shelters it from the scorching rays of the sun; and as it draws the land less than any other grain, it leaves it in better heart for the clover. It has been strongly recommended to be sown on good, clean, light land, after winter tares have been either fed off by sheep or cut green for horses. By this means, the root weeds, which had been smothered by the tares and ploughed up immediately after the tares were off, will not have time to spring up again; the rapid growth and the shade of the buck-wheat effectually keep them down, and prevent the annual weeds from going to seed. Thus a crop is obtained between the tares and the wheat, and the land is kept perfectly clean. This is mentioned by Arthur Young, in the Survey of Suffolk, as a successful practice, and strongly recommended. Buck-wheat may be ploughed into the ground in a green state. For this purpose, it is sown tolerably thick, and when the plant is in its greatest vigour and in full blossom, a roller is passed over the crop to lay it level with the ground. The plough, with the addition of a skim coulter, turns it neatly into the furrows and completely buries it. It soon decays from its own moisture, and the decomposed parts being incorporated with the soil greatly add to its fertility.

On poor sandy reclaimed soils, especially if they are trenched to a considerable depth, buck-wheat may be sown with great advantage for the purpose of being ploughed in as a preparation for the first crop of turnips. The turnips fed off by sheep penned on them will enrich and consolidate the ground sufficiently for a crop of corn or clover and grass seeds. A bushel and a half, or at most two bushels, is an ample allowance of seed for an acre; the cost of it is at most 8s. or 10s. When buck-wheat is ploughed in for manure, care must be taken to consolidate the surface of the land, if it be light, by rolling or other means, for the decaying stems leave it very loose and hollow; but if the soil is tenacious the air which is let in mellowes it and makes it crumble, which is a great advantage. Provided the soil be stirred to a considerable depth, so that the roots of the buck-wheat may strike deep in search of nourishment however poor or light it may be, or however dry the weather, it will produce a good crop of seed. It only wants a few showers at first, and at the time when the seeds begin to be formed. It continues to put forth blossoms for a long time, and if the first-formed seeds should not be so full as might be wished, the later may probably make up for it. The careful husbandman must examine the plants at different periods, and reap when he finds the greatest quantity of ripe and full seeds. It is not possible by any management to have all the flowers come to seed in perfection; but under favourable circumstances from four to five quarters of good seed may be obtained from an acre of well-tilled land.

Manure is seldom or never laid upon land in which buck-wheat is sown, because even where manure is abundant it is reserved for other crops supposed to require it more. It is asserted by many that manure makes the buck-wheat run to haum and diminishes the crop of seed. That this may be the case, with injudicious additions of dung, we are not inclined to dispute; but if the land was tilled to a sufficient depth, if the manure was well prepared and intimately mixed with the soil, and if the buck-wheat was sown thin in proportion to the richness of the land, we have no doubt that it would not only grow high and strong and blossom well, but would also give an abundant crop of seeds. The reason why crops run to straw and are deficient in corn, when the land is moist and has been highly manured, is, that the manure ploughed in and covered only with a few inches of soil excites an extraordinary vegetation in the young green plant, which makes it shoot out a strong vigorous stem; but by the time of flowering the dry weather has exhausted the rich moisture of the manure, and the plant, pushing its roots downwards in search of food, finds a less fertile soil below, out of which it cannot draw the materials to form a full and plump seed. But when a soil is naturally rich, or artificially made so to a considerable depth, a strong and high stem is generally the forerunner of a great bulk of seed, as is often seen in those oats which are scattered thinly among winter tares, the straws of which are like reeds, and the grain, if allowed to ripen, is always both heavy and abundant.

Buck-wheat is sometimes cut in its tender state for

soiling cattle. It is said to increase the milk of cows greatly: it is also occasionally pastured by sheep. There is a diversity of opinion on its qualities, some speaking highly of it, and others asserting, and with some appearance of truth, that it is not eaten by sheep or cattle in preference to any other plant, and that it has a stupifying and intoxicating effect when eaten in any great quantity. Upon the whole, we are inclined to think that its value is chiefly as an addition to the variety of plants cultivated for their seeds, and as a cheap vegetable manure.

Buck-wheat may be reaped with the sickle or mown with the scythe, or it may be pulled up by the roots. The latter method is recommended by some, as less likely to shed the seed when fully ripe. In dry weather it is recommended to cut or pull it very early in the morning or late at night, when the dew is on it, and not to move it much in the day. It may be tied up in sheaves or put into small heaps, as is done with peas. In either case birds must be carefully scared away, or they will take a large share of the produce.

Buck-wheat as a grain may be given to horses instead of oats, or mixed with them. No grain seems so eagerly eaten by poultry, or makes them lay eggs so soon and so abundantly. The meal, when it is ground, is excellent for fattening cattle or pigs. The flour is fine and white, but from a deficiency in gluten does not make good fermented bread. It serves well however for pastry and cakes: crumpets made of buck-wheat flour eaten with butter are a favourite dainty for children in Holland. A hasty pudding is also made of the flour with water or milk, and eaten with butter or sugar.

On a careful consideration of the reasons for and against a more general cultivation of buck-wheat in our northern climates, it appears to have certain qualities which make it well worth attention. As it belongs to a different natural family in the vegetable kingdom it is probable that it may be a useful change when the land has been too long cropped with gramineous plants. It may impart to the soil, or abstract from it, some principles by which its power of producing other crops may be increased. This can only be learned with certainty by repeated experiments; but some considerable effect may be expected from the powerful salts which we know are found in the ashes. Its use as a manure is indisputable; the only thing required is an accurate calculation of the comparative expense of its application, with that of bones or any other purchased manure, taking quality and quantity into consideration. A few experiments on an extensive scale, and made with that attention to minute circumstances which is so often neglected in agricultural experiments, and repeated with perseverance, might place the cultivation of buck-wheat in a new point of view.

The result of the analysis of the ashes produced by burning buck-wheat straw as given by Vauquelin is

Carbonate of potash	. . . . .	29.5
Sulphate of potash	. . . . .	3.8
Carbonate of lime	. . . . .	17.5
" magnesia	. . . . .	13.5
Silica	. . . . .	16.2
Alumina	. . . . .	10.5
Moisture and loss	. . . . .	9.

100

These results will no doubt vary according to the soil in which the plants have grown. But the carbonate of potash is so abundant that it has been suggested as a profitable use of the haum to burn it for the purpose of obtaining this useful salt. This abstraction from the soil, or its addition to it in the shape of manure, must produce a considerable effect on the fertility. There is another species of buck-wheat mentioned by some authors as superior to the common, and more deserving of culture in northern climates; it is called the *Polygonum Tartaricum*. Yuart, in his excellent article 'Succession de Culture,' in the 'Cours Complet d'Agriculture,' Paris, 1820, speaks highly of the Tartarian buck-wheat. It is yellower in the colour, and bears a smaller seed, but is much hardier. Its stubble will remain alive during the winter, grow out in spring, and produce a second crop the next year if let alone; but this does not seem any great advantage, as the second crop is very apt to be overrun with weeds. Yuart mentions a crop grown in the Department de l'Isère which appears extraordinary; 12 measures sown produced 1296 measures, or more than a hundredfold, in a very dry season. Another

gentleman obtained 80 for one. Notwithstanding these accounts, Thær, who has repeatedly tried it, says that 'its produce in a field is so insignificant that he cannot join in its praise.' (vol. iv. s. 162). Perhaps the experiments made in a rich spot in a garden have given results which multiplied produced the above extraordinary returns. Agricultural experiments are unfortunately often made in this way, and consequently give very fallacious results.

BUCKOWINE, The, now forms the Galician circle of Czernoviz. [GALICIA.]

BUCO'LICS, from the Greek *Βουκολικά* (Bucolics), signifying literally, 'poems on the tending of oxen or herds generally.' Bucolics are a species of poetry, or rather an exercise in verse, in which the interlocutors are shepherds, husbandmen, and their mistresses. Great antiquity is claimed for its invention. Some have babbled about the Golden Age and Arcadia; and some have attributed it to the Sicilians, perhaps for no better reason than because their island exhibits abundance of pastoral scenery. Others have said, that on the invasion of Greece by the Persians, when the festivals of Diana were suspended, the country people thronged the temples and sang hymns to that goddess concerning their rural occupations, which thence were called Bucolics. There has been equal difference about the name of the inventor, and Dionus and Daphnis, whoever they may be, Stesichorus and Theocritus, has each had his supporters; for the critics have forgotten that it is one thing to sing as shepherds do while tending their flocks, and quite another thing to sing as poets do when relating the life of shepherds.

Theocritus, Moschus, and Bion, have written Bucolics in Greek, and Virgil has copied them in his Eclogues. Calpurnius, a later Latin poet, has shown us how tame and insipid Bucolic poetry may be. Such beauties as these compositions contain are chiefly comprised in delicacy of expression and refinement of language. Bucolic poetry has been little cultivated by the moderns: the French have converted it into mawkish gallantry; and the rank which it maintains in England may be estimated, when it is stated that Cunningham and Shenstone have been its principal ornaments. Those who deem this subject worthy of further investigation may look to the 'Poetics of Scaliger,' i. 4; 'Salmasius on Solinus,' pp. 851, 867; and the dissertation prefixed by Heyne to his edition of the Eclogues of Virgil.

BUCCU. [DIOSMA.]

BUD, or LEAF-BUD, in vegetable physiology, is the organized rudiment of a branch. Whatever becomes a branch is, when first organized, a bud; but it does not therefore follow that all buds become branches: on the contrary, owing to many disturbing causes, to which reference will presently be made, buds are subject to transformations and deformities which mask their real nature.

A leaf-bud is constructed thus:—In its centre it consists of a minute conical portion of soft succulent cellular tissue, and over the surface of this are arranged rudimentary leaves, in the form of scales. These scales are closely applied to each other; those on the outside are the largest and thickest, and the most interior are the smallest and most delicate. In cold countries the external scales are often covered with hair, or a resinous varnish, or some other contrivance, which enables them to prevent the access of frost to the young and tender centre which they protect; but in warm countries where such a provision is not required, they are green and smooth, and much less numerous. The cellular centre of a bud is the seat of its vitality; the scales that cover it are the parts towards the development of which its vital energies are first directed.

A leaf-bud usually originates in the axil of a leaf; indeed there are no leaves in the axil of which one or more buds are not found either in a rudimentary or a perfect state. Its cellular centre communicates with that of the woody centre of the stem, and its scales are in connexion with the bark of the latter. When stems have the structure of Exogens, the bud terminates one of the medullary processes; in Endogens it is simply in communication with the cellular matter that lies between the bundles of woody tissue in such stems. It is moreover important to observe that this is true not only of what are called normal buds, that is to say of buds which originate in the axil of the leafy organs, but also of adventitious buds, or such as are occasionally developed in unusual situations. It would seem as if, under favourable circumstances, buds may be formed wherever the cellular

tissue is present; for they occur not only at the end of the medullary processes of the root and stem of Exogens, but on the margins of leaves, as in *BRYOPHYLLUM*, *Malaxis paludosa*, and many others; and occasionally on the surface of leaves, as in the case of an *Ornithogalum* published by Turpin, and not very uncommonly in ferns.

A leaf-bud has three special properties, those of *growth*, *attraction*, and *propagation*. In warm damp weather, under the influence of light, it has the power of increasing in size, of developing new parts, and so of *growing* into whatever body it may be eventually destined for. In effecting this it lengthens by the addition of new matter to its cellular extremity, and it increases in diameter partly by a lateral addition to the same kind of tissue, and partly by the deposit of woody matter emanating from the bases of the scales or leaves which clothe it. As soon as growth commences, the sap which a bud contains is either expended in forming new tissue, or lost by evaporation; in order to provide for such loss, the bud *attracts* the sap from that part of the stem with which it is in communication; that part so acted upon attracts sap in its turn from the tissue next it, and so a general movement towards the buds is established as far as the roots, by which fresh sap is absorbed from the soil. Thus is caused the phenomenon of the flow of the sap. Every leaf-bud is in itself a complete body, consisting of a vital centre, covered by nutritive organs or hairs. Although it is usually called into life while attached to its parent plant, yet it is capable of growing as a separate portion, and of producing a new individual in all respects the same as that from which it was divided; hence it is a *propagating* organ as much as a seed, although not of the same kind; and advantage has been taken of this for horticultural purposes. [BUDDING.]

In general a bud is developed into a branch; but that power is interfered with or destroyed by several causes. This must be evident from the following consideration independently of all others. Every one knows that leaves are arranged with great symmetry upon young branches; as buds are axillary to leaves, the branches they produce ought therefore to be as symmetrically arranged as leaves; and this we see does not happen. We may account for this in two or three ways: accidental injuries will doubtless destroy some; from want of light others will never be called into action; and of those which are originally excited to growth a part is always destroyed by the superior vigour of neighbouring buds, which attract away their food and starve them. There is moreover in many plants a special tendency to produce their leaf-buds in a stunted or altered state. In fir trees the side buds push forth only two, or a small number of leaves, and never lengthen at all; in the cedar of Lebanon they lengthen a little, bear a cluster of leaves at their points, and resemble short spurs; in the sloe, the whitethorn, and many other plants, they lengthen more, produce no leaves except at their very base, and grow into hard sharp-pointed spines. Bulbs are nothing but leaf-buds, with unusually fleshy scales, and with the power of separating spontaneously from the mother plant; and flower-buds are theoretically little more than leaf-buds without the power of lengthening, but with the organs that cover them in a special state. Hence flowers are modified branches. [FLOWER.]

BUDA, or OFEN (the first name, as well as the Sclavonian 'Budín,' being that by which it is known in the country itself), a city on the right bank of the Danube, in the circle of Pesth, and nearly in the centre of the kingdom of Hungary, is united with Pesth, which lies opposite to it on the left bank of that riv., and is joined to it by a bridge about 3800 ft. in length: the two towns constitute the metropolis of Hungary and seat of government. Buda is said to derive its name from Buda, a brother of Attila, who made the town his residence, and much enlarged it. On the other hand, Alt-Ofen, which extends further up the Danube, and is looked upon as a separate quarter of Buda, and is a privileged m. t., is ascertained to have existed in the time of the Romans, and was by them called Sicambria. The name of Ofen (oven or kiln) has been given to it by the Germans, who form the bulk of its inhabitants. It was the spot also where the modern Hungs or Magyárs first established their head-quarters: it was raised to the rank of a royal free-town by Bela IV.; and became the seat of government in the year 1784. Buda, from its greater antiquity, has not inaptly been styled the mother of Pesth. It is built round the Schlossberg in the midst of a mountainous and pictu-

resque country, bordering E. on the banks of the Danube, and encircled by vineyards and forests on the other three sides; it is about 9 m. in circuit, and according to Blumenbach contained three years ago 3089 houses and 29,457 inh., independently of the garrison and strangers. These numbers exhibit an increase of 2509 since the year 1804, when there were 6278 families, and 26,948 inh. The central part of Buda is comprehended in what is called the Fortress, and rising on all sides round the acclivities of the Schlossberg is inclosed at its foot by walls and bastions; thence it spreads out into five suburbs, the most considerable as well as handsomest of which is the 'Water-town,' which extends northwards; W. of this lies the 'Via Regia,' a long narrow street with remarkably high houses; and further to the E. of both stands the New-town (or Neu-stift), a more cheerful quarter than either, but on a less lofty scale of construction, with a line of warehouses on the Danube; this suburb is immediately S. of Alt-Ofen. The fourth is 'Taban' or 'the Raizen-town,' which skirts the Schlossberg on the S., and is the largest and most populous of any quarter outside of the walls. North of the Raizen-town, and between this and the Via Regia, lies 'Christina-town,' which is full of gardens, and built in the valley that separates the Schlossberg from the vine-clad heights which extend W. of it. To the S. of the whole there is a lofty eminence called the Blocksberg or Gerhardsberg, on the summit of which the Royal Observatory has been built, and its sides are studded with a multitude of small isolated villas and houses. The Fortress, which occupies about a twelfth part of the entire area of Buda, is laid out on a regular plan, and is full of handsome buildings and spacious squares. It contains several palaces; among them are the royal palace, a quadrangular structure, the front of which looks upon the Danube, is 564 ft. in length, and contains 203 apartments; in the left wing is the chapel royal, where the regalia are kept, and the right is appropriated for the Palatine's residence and for the royal library. An extensive garden surrounds the palace on three of its sides. The other edifices of note in this quarter are the Church of the Ascension of the Virgin, a spacious Gothic structure; the garrison church, in which the late emperor was crowned; the house of assembly for the states, the arsenal, the town-hall, and the several buildings for the military, post-office, commissariat, judicial, and other public departments, and the university press and type-foundry. This, the finest part of the town, is inhabited almost wholly by the officers and servants of the crown, but it is dull and lifeless in comparison with the quarters without the walls, where the mechanic, manufacturer, and trader live. The most remarkable objects in the Water-town are St. Anne's, a handsome parish church; the church of the Capuchins, a statue of the Virgin Mary, and two sets of water-works, driven by horses, from which the Fortress is supplied. In the Via Regia are the church of the Franciscans, a monastery, and the primate's residence and offices. The New-town contains a column dedicated to the Holy Trinity, in commemoration of the plague of 1710, which is 52 ft. in height; and the Raizen-town, the Roman Catholic church of St. Catherine, a Greek church, and the residence of a Greek bishop. Buda contains altogether twelve Roman Catholic churches, one Greek church, and a synagogue. It possesses a royal arch-gymnasium (with about 600 pupils), a Roman Catholic high school, several schools for the middle and inferior classes, three monasteries, and a nunnery. The height on which the observatory stands is about 516 ft. above the level of the Mediterranean, and close upon the banks of the Danube, which is 216 ft. above the same level. The observatory itself, in 47° 29' 12" N. lat., and 19° 2' 45" E. long., belongs to the university of Pesth, and is composed of a main building and two towers, both of which are ascended by staircases carefully disconnected from the walls. No expense has been spared to supply this establishment with the finest instruments and apparatus. The sulphurous warm-baths in various parts of the suburbs are particularly deserving of attention. Buda contains two public hospitals, and one for females, an asylum for indigent townsmen, a lazaretto and infirmary, a refuge for navigators, and other benevolent institutions.

Buda is by no means a manufacturing town; there is one silk and velvet factory, the annual returns of which do not exceed 12,000*l.*; a manufactory of leather, to the extent of about 25,000*l.* a year; a cannon-foundry, several copper-smith's works, and a gunpowder manufactory; besides one

spinning-mill for silk thread, and an earthenware and a tobacco manufactory. A few woollens and linens are also made. The trade of the town principally consists in the wines produced by the vineyards in the environs, to the average amount of 140,000 or 150,000 aulms (2,100,000 to 2,250,000 gallons). In very favourable seasons, as many as 300,000 aulms, or about 4,500,000 gallons, are made. The bulk of this wine, which is not much inferior to Burgundy, and is well known under the name of 'Ofener-Wein,' comes from the extensive vineyards belonging to the town itself, which are said to cover an area of 70 sq. m.

Independently of a theatre, Buda possesses within its walls a variety of places for public amusement, and without them, an inexhaustible fund of attractions in the beauty and diversity of the surrounding country. Buda was captured by the Ottomans in 1541, and remained in their possession until the year 1686.

BUDDHA, BUDDHISM. Among the religions of Asia, that of Buddha is one of the most remarkable, partly for the peculiar character of its doctrine, and partly on account of the vast number of its followers. From India Proper, the country which gave it birth, nearly every trace of Buddhism has now disappeared; but it has become the religion of the great majority of the inhabitants of the high table-land to the north of the Himalaya, as far as the boundary of Siberia, and it is the prevailing creed of China, of the Peninsula of India beyond the Ganges, of Ceylon, and several islands of the Indian archipelago, and of the empire of Japan. According to an estimate given by Hassel, there are now upon the globe—Christians of all denominations, 120 millions; Jews, nearly 4 millions; Mohammedans, 252 millions; followers of the Brahmaic religion, 111 millions; Buddhists, 315 millions.

Though much has been written upon Buddhism, a critical investigation of its origin, its system of doctrines, and the history of its diffusion among so large a portion of mankind, is still a desideratum. Hardly any of the original authentic documents of the sect, which are written in Sanskrit, have yet been fully examined, and the information which we now possess respecting its dogmas is almost exclusively derived from sources of a secondary rank. We think it right, therefore, to warn our readers not to receive with too implicit faith the statements respecting Buddhism, which we shall endeavour to condense within the limits of the present article. Several distinguished scholars, among whom we may mention Mr. Isaac Jacob Schmidt, of St. Petersburg, Mr. Alexander Csoma de Körös, now at Calcutta, Mr. Brian Houghton Hodgson, now at Catmandu in Nepal, and Mr. George Turnour, in Ceylon, are severally engaged in inquiries, the results of which may materially affect the opinions here advanced.

The origin of Buddhism is involved in much obscurity. Doubts have been raised whether Buddhism is of Indian growth, or whether it was introduced from abroad; the relative antiquity of Buddhism and the religion of the Brahmaic Hindus, who follow the religion of the Vedas, has been matter of dispute; and the greatest discrepancy prevails with respect to the epoch which, according to various authorities, should be assigned to the founder of the sect.

Among those who, contrary to the opinion generally received by the Buddhists themselves, have suspected that the sect did not originate in India, Sir William Jones must be mentioned. The curled or woolly appearance of the hair on the head of the statues of Buddha, many of which are sculptured in a black kind of limestone, combined with other circumstances, led him to form an opinion, that the inhabitants of India, who occupied the country previous to its invasion by the Brahmaic tribes from the north, were of African descent, and that in the sculptured representations of their legislator some of the characteristic appearances of the negro race had been preserved. (*Asiatic Res.* vol. i. p. 427.) But the foundation on which this opinion rests is in some degree shaken by the fact, that images of Buddha are as frequently seen in white or grey as in black stone; while on the contrary, statues of Krishna, Sârya, Ganësa, and other deities of the various Brahmaic sects, with whom the presumed reason of the Buddhists for giving the preference to black could have no weight, are nevertheless frequently seen of that colour. Another argument against the supposed African origin of Buddha may be deduced from the enumeration of his *lakshanas* and *vyangjanas*, or points of beauty and peculiar personal appearances, which are so familiar to Buddhists every where, that this circumstance alone seems to warrant

their antiquity, and to entitle them to at least equal credit in our inquiry into the extant sculptured images of the sage. The original Sanskrit text of the thirty-two *lakshanas* or 'characteristica,' and of the eighty *vyangjanas* or 'peculiar signs' of Buddha, has just been published in the appendix to an interesting paper by Mr. Hodgson in the *Journal of the Royal Asiatic Society*, vol. ii. p. 314, &c. Among the former we observe one (No. 14, *suvarna-parvatis*) which describes Buddha as being of a gold-coloured complexion; and among the latter there is one (No. 59, *tsanga-adakshatâ*), according to which he had a prominent (aquiline?) nose. Both these epithets are utterly inapplicable to an individual of the negro race. (See Abel Rémusat, *Mélanges Asiatiques*, Paris, 1825, 8vo., vol. i. p. 100, &c.) With reference to the curly hair of the statues of Buddha, we may mention that, according to a remark of Colonel Mackenzie (*As. Res.*, ix. p. 247) the *Mahâvratas*, a class of *Jaina* ascetics who are not allowed to shave the head with razors, employ their disciples to pull out the hair by the roots; and to the effects of this operation they attribute the appearance on the heads of the images of their *Gurus* or saints, which Europeans suppose to represent curly or woolly hair. It has been suggested by some, that the curls on the head of the images of Buddha might be accounted for in a similar manner. In the list of personal characteristics of Buddha, however, no less than six terms descriptive of his hair are enumerated (*vyangjanas*, No. 72—78), which, though some are not very clear in themselves, seem to attach a notion of beauty to its peculiar appearance: this could hardly be the case if the curls had been considered as morbid, and produced by a violent extirpation of the hair. The answer which Mr. Hodgson obtained from a priest in Nepal to an inquiry respecting the reason of Buddha being represented with curled locks was to this effect, that it was considered a point of beauty; still the notion is, as Mr. Hodgson observes, an odd one for a sect which insists on tonsure.

The Buddhists themselves, however much they may disagree as to the period at which the founder of their religion lived, make no pretensions to a very high antiquity of the sect, but admit on every occasion the priority of the Brahmaic creed. The principal considerations upon which the superior antiquity of the Buddhists over the Brahmans has by some been asserted, are, 1st, the existence of large architectural remains evidently referable to the Buddhaic sect, which are widely spread over nearly the whole country now occupied by the various sects of the Brahmaic profession; 2nd, the entire absence of every living remnant of the Buddhaic sect throughout India, which presupposes that it must have ceased to exist at a very early date; 3rd, the opinion generally admitted that the Brahmaic tribes invaded India from the north or north-west, which might seem to favour a conjecture that the earlier inhabitants of the country, whom they subdued and subsequently expelled, were Buddhists; and 4th, the peculiar character of Buddhism, which is in many respects simpler than Brahmaism, e. g., in the absence of castes, and thus seems to agree better with our notions of the state of society in the early stages of its development. It will however be readily admitted that these arguments are open to objections. The existence of architectural remains, far from establishing any claim on the part of the Buddhists to absolute priority, only proves that the sect to which these monuments belong must for a time, and probably at a remote period, have been in the undisturbed possession of the country; and also that it had attained considerable proficiency in the arts of architecture and sculpture, which would naturally lead us to presume an advanced state of general civilization. That there are no Buddhists at present in the country where their former dominion is attested by those monuments, may be considered as corroborating the well-established report of the violence and intolerance with which the Buddhaic were for many centuries persecuted by the Brahmans, and at last, in the seventh century of our era, almost entirely expelled from India. The supposition that Buddhaic were in the possession of the country at the time when the Brahmaic tribes invaded it, is likewise subject to serious doubts. The caste named *Sâkhas* in the Brahmaic codes of law consists, in our opinion, of such of the original inhabitants of India as became subject to the Brahmans and were suffered to continue in the country where the conquerors settled, but were entirely dependent on the will of the latter, and did not participate in any of those civil rights which the Brahmaic community conferred on its members.

The ends of laws attributed to Manu speak of them as of an inferior order of beings, civilized and incapable of civilization, the very nature of which is immutability; expressions, certainly, which even the pride of a conqueror or the fanaticism of a religious persecutor could hardly have applied to a sect, the members of whose faith in centuries old excite our astonishment; and widely different from the spirit in which the Brahmins called Sankara, in his Commentary on the Vedānta, unions and refutes those adherents of the orthodox faith. Among all nations, moreover, in whom Buddhism has found success, and as far backwards as we can trace its history, it is evident that its followers have always regarded Sankara, the sacred language of the Brahmins, and the mother of numerous dialects now spoken in India, as the medium through which the Brahmins of the sect were originally promulgated; and we find that Sanskrit words and phrases relative to theology have become so inseparably connected with the religious ideas which they were first employed to express, that they have accompanied the Buddhist faith in all its migrations, and are now entered in many a language unconnected with the Sanskrit. This use of the Sanskrit language is one of the strongest arguments in support of the opinion that Buddhism originated in a country where Brahminism then flourished. Nor can we admit that this opinion is contradicted by the pretended simpler character of Buddhism, which has no illustration of cases. In the most ancient portions of the Vedā, a division of the people into tribes is alluded to, and the earliest account of India by the Greeks who visited the country (Arrian, *Indic*, c. 11, § 1; Diodor. Sic. l. 2, c. 49, § 1; Strabo, xv. c. 1, p. 703, 704, 705, 706; Ptolemy, *Geog. Nat.*, vi. c. 19,) describe its inhabitants as distributed into certain classes. An institution so materially affecting the entire frame of society and the interests of every individual member of the community can only have arisen gradually, partly, it seems, out of circumstances attending the manner in which the country came into the possession of the ruling tribes, and partly as the result of that randomness of population like heirlooms, by descent from father to son, certain offices, or the exercise of certain arts and professions, which is so peculiarly characteristic of almost all nations of the Indo-Germanic race. Positive laws may have regulated this institution, and by their sanction have contributed to render it permanent; but we must reject as entirely untenable the notion that a system of this kind could have been produced by the act of any legislator, however powerful, among a nation where no trace of a distribution into classes previously existed. Yet, on an assumption similar to this we should be driven, were we to admit (as we believe it must be admitted) that there was no difference of race between the two sects, and still to suppose that Buddhism, which recognises no distinction of caste, was prevailing in India before the introduction of the Brahminical institutions.

We have thought it right to notice these arguments adduced in support of the asserted priority of the Buddhists over the Brahmins, though that theory may at present be considered a chimera out of date, and all who have inquired into the subject seem to agree in the adverse opinion, that Buddhism grew out of Brahminism; and that the earliest Indian sect, of which we have any distinct knowledge, is that of the followers of the Vedā, who worshipped the sun, fire, and the elements.

According to the concurrent traditions of the Buddhists, in various parts of Asia, the founder of the sect was the son of Suddhōdana, King of Magadha in South Behar, and Māyā. His name is said to have been Sarvārthasiddha; but he was frequently called by what appears to have been a sort of erroneous designation, Gautama, and by the complimentary surname Sākyasiddha and Sākyamuni, i. e., 'the Son' or 'the Devotee of (the race of) Sākya.' The title of Buddha, or 'the Sage,' does not seem to have been given to him till after he had attained eminent sanctity as a teacher of religion. Several of these names appear under somewhat modified shapes in the languages of the various Buddhist nations; thus Sākyamuni has, by the Mongols, been corrupted into Shigamun; Garibma, preceded by the honorific Sine-sat title of Sramana, 'the ascetic,' has, in Siamese, become Sammanasana; the Chinese have converted Magadha into Māgā, under which name they comprehend India generally; Buddha they have corrupted into Fo-te and Fo; and Suddhōdana, has many other Sanskrit compound names, they have analysed and translated into their own language as King-han-wang, i. e., 'the estate of pure food.'

The circumstances of the life of Buddha, which we find recorded, are only few. Conformably to the prevailing usage of the country, the infant was, a few days after his birth, presented before the image of a deity, which is said to have inclined its head when the child was brought near its shrine, as a presage of his future greatness. In his tenth year the boy was placed under the guidance of a spiritual instructor, whose name, according to a Mongol account of the life of Buddha, was Bāh-Jurem Dākshī. He soon developed mental faculties of the first order, and became equally distinguished by the uncommon beauty of his person. At the age of 20 years he married a noble virgin called Yasodhara (Māyā in the Ceylonese account of his life). He had by her two children, a son (whom the Mongols call Bahadri, the Ceylonese, Bahadri Kumārīya) and a daughter. At this period of his life he related that earnest meditations concerning the brevity and misery of mankind began to engage his mind, and he projected a plan of retiring from human society and becoming a hermit. His father endeavored in vain to frustrate this design; Buddha escaped the vigilance of the guards appointed to watch him, and took his abode on the banks of a river, named in the Mongol history Arasa or Narasa, in the kingdom of Udrā. Here he lived during six years, undisturbed in his devout contemplations. At the expiration of this period he came forward at Varanasi (Varanasi; i. e., Benares) as a religious teacher. It is said that, by some who heard him, doubts were at first entertained as to the soundness of his mind; but his doctrines soon gained credit, and were propagated so rapidly that Buddha himself lived in less than a year all over India. He died in his 80th year. (Klaproth's *Asie Polyglotte*, p. 122, &c.; T. J. Schmidt's *Geschichte der Ost-Indien*, p. 312, 313.)

The statements respecting the age when Buddha lived vary in a degree which is perhaps without a parallel in history. The difference between the earliest epoch assigned for the death of Buddha by some Tibetan writers, and of the epoch assumed by the Ceylonese, which is the most modern, amounts to 1877 years, the former placing it in the year 2430, and the latter in the year 553 before Christ. Böhlen, in his work on ancient India (vol. 1, p. 315—317) has brought into a tabular arrangement no less than 23 different statements as to the time when Buddha died. Eight of these vary between the years 2430 and 1202; 14 between the years 1021 and 1000; and 10 between the years 559 and 543 before our era. The concurrence of a comparatively large proportion of these statements, in placing Buddha in the eleventh century, is remarkable, and, combined with other circumstances hereafter to be detailed, renders it probable that the Tibetan and Mongol account which fixes his birth in either 1029 or 1027, and his death in 945 or 947 before Christ (Schmidt, l. c. p. 314), may come very near the truth. The discrepancy of the other accounts may perhaps to a certain extent be accounted for by assuming that those Peguans, Siamese, Burmese, and Ceylonese Buddhists, who assign a comparatively recent period, confounded the original author of the sect with one of his successors, who likewise received the title of Buddha; and the very early dates given by some, chiefly Tibetan Buddhists (e. g., 2134 a. c., according to Stearns Særen), may possibly owe their origin to the notion of six sages, similarly gifted with divine wisdom, who are said to have preceded Sākyasiddha. (Hodgson, *Transactions of the Roy. Asiat. Soc.*, ii, p. 239.)

A document of great importance for the history of Buddhism, and which strongly confirms us in our belief that he flourished about the year 1000 a. c., is a list of the 33 earliest Bodhisattvas, or successors of Sākyasiddha, as spiritual rulers of the Buddhist sect, which A. Rehnast (*Mittheilungen Asiatischer Forschungen*, 1, p. 113, &c.) and Klaproth (*Nouvelles Journaux Scientifiques*, vol. 10.) have drawn from Chinese and Japanese sources. According to this list Sākyasiddha was born on the 5th day of the 4th month; in the 25th year of the reign of the Chinese king Tchia-wang of the T'hou dynasty (i. e., according to Des Guignes's calculations, 7025 a. c.), and he died on the 13th day of the 2nd month in the 5th year of Hui-wang (i. e., 7025 a. c.). The document then proceeds to enumerate the names of 28 Buddhist patriarchs, stating of most of them where they were born, and also the year of the contemporary Chinese kings in which they died. The 25th patriarch is Bodhidharma, the last who resided in India; he is said to have embarked on the 'southern sea,' and to have gone to China, where he settled near the town

of Ho-nan. He died there in A.D. 495. The fact that no more than 28 patriarchs are enumerated in a period of 1445 years (between 950 B.C. and 495 A.D.) would alone be sufficient to convince us that the list is imperfect, and that many names are wanting in it. The list indeed does not profess to be in every respect complete; the precise date of the accession or death of several of the patriarchs is stated not to be found on record, or to be known only approximatively; and these undisguised imperfections, which an intention to deceive on the part of the compiler might so easily have concealed, are calculated rather to confirm than to weaken our faith in the authenticity of the document.

Mr. Wilson, in his account of the 'Rájá Tarangini,' a Sanskrit chronicle in verse, of the country of Cashmir (*As. Res.*, vol. xv. p. 111), has drawn attention to a passage which he translates as follows:—'When 150 years had elapsed from the emancipation of the Lord Sákyasinha in this essence of the world, a Bodhisattwa in this country (Cashmir), named Nágárijuna, was Bhúmíswara (lord of the earth).' As previous passages of the same chronicle allude to Buddhism as extant in Cashmir, Mr. Wilson is of opinion that Sákyasinha, the founder of the sect, has been here confounded with one of his successors, a Bodhisattwa of the sixth century B.C. In the list of early Bodhisattwas published by Rémusat, (compare Klaproth, in the *Nouveau Journal Asiatique*, 1833, vol. xii. p. 421.) we find one 'Foethonanthi, (Buddhánandi?) of Kanara, of the family of Gautama,' who is stated to have died in the year 535 B.C. We think it not unlikely that this may be the person intended in the passage quoted by Mr. Wilson. Deducting 150 years said to have elapsed after his death, we have the year 383 B.C. as the epoch at which the chronicle states that a Buddha hierarch resided in Cashmir as spiritual chief, (according to Mr. Wilson's illustration of the text,) contemporary with Gonerda, the temporal sovereign.

The earliest allusion to the sect of Buddha in any western writer has been supposed to occur in Herodotus (iii., c. 100; Korai, *Prodr. Hell. Bibl.* p. 271,) who says of certain Indians, that they kill no animals, and live on the vegetable products spontaneously produced by the soil. Nicolaus Damascenus may, however, possibly allude to the very words of Herodotus, in a detached passage where he speaks of an abstemious sect called Artoni (*Ἀρτόνοι*), which name seems to be the Sanscrit Arhat, or Arhata, a very common designation of the Jaina sect, who are even more distinguished than the Buddhas by their extreme tenderness for animal life. Arrian (*Indic.* c. 8) mentions the name of an antient fabulous king of India (*Boudāc*), which resembles that of Buddha in sound; but the context in which it occurs does not appear to us to warrant the conjecture of Bohlen (*Indien*, i. p. 319), that the founder of Buddhism be intended. Strabo (xv. c. 1, p. 712, ed. Casaub.), on the authority of Megasthenes, states that there are two classes of philosophers among the Hindus, the Brachmanes and Garmanes; and from the account which he gives of the latter, who are by Clemens of Alexandria (*Strom.*, i. p. 305) more correctly called Sarmanes, it is clear that by them the Buddhists are to be understood. The name Sarmanes appears to be the Sanscrit word Sramana, 'a religious mendicant, an ascetic.' A Buddha beggar is thus designated by a Brahman in the 'Mrichhakati,' a Sanskrit drama, supposed by Mr. Wilson to have been written either one century before, or two centuries after our era (act viii., p. 212, ed. Calcutt.) We recognise the same word under a slightly modified shape in the first component part of the name of the Indian philosopher Zarmānos Chanes (*Ζάρμανος Χάνης*, written in some MSS. *Ζαρμανοχάνας*, *Ζάρμανος Χήνας*, *Ζαρμανοχάνης*; and in Dion Cass. liv. c. 9, *Ζάρμανος*, *Ζάρμανος*, or *Ζάρμανκος*), who came to Europe with an embassy from king Porus to Augustus, and voluntarily burnt himself at Athens. (Strabo, xv. c. i. pp. 719, 720.)

Two very remarkable passages on the various sects prevailing in India occur in Clemens of Alexandria. In the first passage (*Strom.* lib. i. p. 359, ed. Potter) he says that there are two classes of philosophers in India, the Sarmanes and the Brachmanes. 'Among the Sarmanes those called Hylobii (*ὕλοβιοι*, Mountagu thinks, should be read instead of *ἀλόβιοι*) do not dwell in towns or houses; they are clad with the bark of trees, eat acorns, and drink water with their hands; they know not marriage, nor procreation of children.' He then proceeds to say that 'there are likewise among the Indians persons obeying the precepts of Butta (*Βούττα*), whom they venerate like a god on account

of his extreme sanctity.' Here the followers of Butta (Buddha) are clearly distinguished from both the Brachmanes and Sarmanes. In the second passage (p. 539, ed. Potter) Clemens speaks of a sect whom he calls Semnoi (another corruption of the Sanskrit name Sramana): 'they go naked all their lives; they make it a point always to speak the truth, and they inquire into the future. They worship a certain pyramid, beneath which they believe the bones of some god to be deposited. Neither the Gymnosophists nor the Semnoi have any intercourse with women, for they deem this contrary to nature and to law, and for that reason they adhere to chastity. There are also females of this class (*Σεμνοί*) who live in perpetual virginity.' The pyramids here spoken of are evidently the dagobas of the modern Buddhists.

The statements respecting the religion of India and China given by the two Arabian travellers who visited these countries in the ninth century (Renaudot, *Anciennes Relations des Indes et de la Chine*, &c., Paris, 1718, 8vo.) are too vague to enable us in every instance to distinguish whether the 'pagans,' of whom they speak, were Buddhists or not. In the report of the first traveller (l. c. p. 3) we meet with an allusion to the impression of a foot on Adam's Peak in the Island of Ceylon, a spot known to Ebn Batuta (Lee's translation, p. 189) as a place of pilgrimage which it has continued to be till the present day with the Ceylonese Buddhists: the second traveller, in speaking of the natives of India, calls their priests Brahmins (l. c. p. 107), and in the account which he gives of their asceticism and of their religious institutions generally, nothing occurs that would, in our opinion, admit of an application to the Buddhas. These statements, though not very explicit, are yet interesting, as they seem to attest the expulsion of the Buddhists from India some time previous to the ninth century, and the existence of the sect in Ceylon.

In the Ante-Islamic portion of the Arabic chronicle of Abulfella, published some years ago by Fleischer (*Abulfella, Hist. Antislamica*, &c., ed. H. O. Fleischer, Leipzig, 1831, 4to.), there is a curious chapter on the various tribes of India (p. 170, &c.) given on the authority of Shehrastani, a writer who flourished in the first half of the twelfth century. Most of the Indian tribes, or rather sects, there noticed, are easily recognised even under the somewhat adulterated names given to them by the Arab, as various branches of Brahmanic Hindus; and the only sect, the name of which bears any similarity to that of the Buddhists, the Behudites (al Bahúdiyyah, in the Arabic text), are described in a manner which removes every possibility of their being taken for followers of Sákyasinha.

We have already alluded to the indirect testimony which Ebn Batuta gives of the existence of Buddhism in Ceylon in describing the pilgrimage to the impression of Buddha's foot on Adam's Peak. In his account of Hindustan, he describes the burning of widows and other practices reprobated by the Buddhists, the prevalence of which is sufficient to convince us that Brahmanism was at that time the established religion of the country.

Marco Polo, who visited Tangent during the second half of the thirteenth century, describes the religious institutions of Kampon, the principal city of that province, in a manner to convince us that Buddhism was then the prevailing creed there, though the name is not mentioned. 'The idolaters of Kampon,' says he, 'have many religious houses, monasteries and abbeys, built after the manner of this country, and in these a multitude of idols, some of which are of wood, some of clay, and some of stone, and covered with gilding. These images are held in extreme veneration. Those persons amongst the idolaters who are devoted to the services of religion lead more correct lives, according to the ideas of morality, than the other classes, abstaining from the indulgence of carnal and sensual appetites.' (*Marco Polo's Travels of Marco Polo*, p. 181.)

An early account, communicated probably by travellers, merchants, or a Lama, or spiritual chief, among the Buddhist Tartars, seems to have occasioned, in Europe, the report of a Prester John, or a Christian pontiff, resident in Upper Asia. It deserves however to be noticed that Barhebræus (*Hist. Dynast.*, p. 280) speaks of a prince of the 'Eastern Turks,' who was a Christian, and who was named Ung-khan, or King John (*Malic Yuhanna*): this prince reigned about the year 1202, and was dethroned by Gengizkhan. [PRESTER JOHN.]

However small is the information to be gathered from these

passages of foreign writers as to the history of Buddhism, it is at least in accordance with the traditions preserved among the Buddhists themselves. For several centuries after the appearance of Sākyasinha his sect seems to have flourished in India, and to have been tolerated by the Brahmans in nearly the same manner as the various divisions still existing among Hindus who follow the religion of the Vedas. Buddhism appears during this period to have penetrated the peninsula in every direction; and a succession of men of different parts of India, pre-eminent for piety, and considered as the living types of Buddha, followed him as his (figuratively) lineal descendants, and as the patriarchs or spiritual heads of the sect.

The numerous Buddhist temples, the remains of which are scattered over a wide extent of country in India, must be referred to this period. These remains it is not difficult to distinguish from others often found in their immediate neighbourhood, but erected for the purposes of Brahmanical worship. The principal characteristics of temples built for the Buddhists are the dagobas and the images of Buddha. The dagoba is a hemispherical or sometimes pyramidal structure containing some relic of Buddha, which usually stands either within or (as in Ceylon, Siam, &c.) close by a Buddhist temple, and is supported by a pedestal, generally of a cylindrical shape, which varies in height. All images of Buddha represent merely human figures in a contemplative posture, sometimes standing upright or reclining, but more frequently sitting on a bench, or squatted down with the feet crossed and resting upon the thighs; the forefinger of the right hand sometimes rests on one of the fingers of the left, but usually the left hand rests upon the left knee, and the right hand is placed on the lap, being held open, as if to receive an offering. The hair is always curled almost in the fashion of a wig, and the ears are extended and drawn down as if by the weight of some ornament suspended at them. A number of small cells is often seen near a Buddhist temple, apparently intended to afford shelter to pilgrims, or to ascetics and priests permanently resident near the sanctuary.

Ruins distinguished by these peculiarities have been found near Benares, at Buddha Gaya in Bengal, at Bag in Malwa, near the Ajunta pass, at Ellora, at Nasik, at Juner, at Carli, on Salsette, and at Guntoor. Some have even supposed that ruins of a similar structure, which have been found at Bamian in the Soliman Mountains, and at Manikyala in Afghanistan, belong to the same class. Those of Boro Bodo (or Bura booder), in Java, cannot be mistaken, and prove undeniably that Buddhism once prevailed in the very centre of that island. The simultaneous occurrence of traces of Brahmanic and of Buddhist worship in several of these places is most remarkable, and has not yet been satisfactorily accounted for: the most likely mode of solving the problem is, in our opinion, one of the three explanations suggested by Erskine, namely, that this proximity of their sanctuaries attests the friendly spirit that once prevailed between the two sects. Many notions peculiar to the mythology and cosmography of the Brahmans seem at an early period to have been received by the Buddhists, and to have been by them admitted as part of their own belief. This remark is well illustrated by Dr. Francis Buchanan's paper on 'the Religion and Literature of the Burmas' (*Asiat. Res.* vol. vii. p. 136, &c.), and by many passages in Sangermano's 'Description of the Burmese Empire,' edited by Dr. Tandy (Rome, 1833), which would, we think, be found on comparison to agree almost literally with passages in the Paurānic works of the Brahmans; and Captain Low, in his account of Tennasserim (*Journal of the Royal Asiatic Society*, vol. ii. p. 257), tells us that in that province dramatic representations founded on the history of Rāma are a favourite entertainment of the inhabitants. We merely hint the probability of some influence having been exercised by this adoption of Brahmanic notions upon the architecture and sculptured decorations of temples, &c. erected by the Buddhists; and the possibility that, where remains of buildings of a Brahmanic character are now found near others of Buddhist character, both may be the work of the latter sect.

The first foreign country into which Buddhism was introduced from India appears to have been the island of Ceylon. According to the traditions preserved in the Mahāvansi and Rājāvalī, chronicles of Ceylon, written in the Pali language, the island received its first civilization through Vijaya, the son of Sinhabāha, King of Waggoo (in the

northern Circars); who, being expelled from his father's kingdom, embarked with 700 followers, and landed on Ceylon on the day of Buddha's death; i. e., according to the Cingalese computation, in April, 543 B.C. (See the *Epitome of the History of Ceylon, from Pali and Cingalese records*, by Mr. George Turnour, in the *Ceylon Almanack* for 1833, p. 224, &c.) But Vijaya himself was not a Buddhist; and although there is a notion of a primeval Buddhism in Ceylon previous to the age of the reputed founder of the sect, yet its doctrines were not introduced into the island till the reign of his sixth successor Devenipeatissa, who, according to the statements of the Cingalese chronicles, must have reigned from 306 till 266 B.C. Devenipeatissa prevailed upon Dharmāsuka, an Indian sovereign, who resided at Pattilipatta (Pataliputra?), to send his son Mihindu and his daughter Sangamitta, with several priests, to Anurādhapura, the capital of Ceylon, for the purpose of introducing the religion of Buddha. They arrived in the first year of Devenipeatissa's reign, and propagated the doctrines of Buddha orally. Relics of Buddha were obtained from various quarters, and dagobas were erected for their preservation; and a sacred tree was planted near Anurādhapura, which is still preserved, and is one of the principal places of pilgrimage in the island. Walagambahu, the twenty-first sovereign of Ceylon, who reigned from 89 till 77 B.C., assembled 500 of the most distinguished priests, and had the tenets of Buddhism reduced to writing. From this time we may consider Buddhism as completely established in Ceylon. Nearly five centuries subsequent to Walagambahu, a learned priest named Buddha-ghōsana, who came from Jambudwīpa, on the continent of India, amplified and commented upon the tenets of Buddhism. This is said to have been done in the reign of king Mahānāma, A.D. 410-432. It deserves to be noticed, that according to the Mahārazaven, a chronicle in the Birman language, Pali books (and the doctrines of Buddha?) were brought from Ceylon to Pegu by a priest named Boudogosa: the date assigned to this occurrence is the year 940 of the Birman æra, corresponding to A.D. 397. (*Alphabetum Barmannum seu Regni Avenis*. Edit. alt. Rom. 1787, p. 14, 15.) That the Birman still acknowledge the reception of their religion and laws from Ceylon is attested by the curious fact that, about the year 1790, the king of Ava sent at separate times two messengers to Ceylon, to procure copies of their sacred writings; and in one instance the Birman minister made an official application to the Governor-general of India to protect and assist the person charged with the commission. (Symes, *Embassy to Ava*, p. 304.) An opinion seems even to prevail among the Talapoins or priests of Ava, that out of the Burmese empire and the island of Ceylon there are no true and legitimate priests of the laws of Buddha. (Sangermano, p. 83.)

Of many of the sovereigns of Ceylon we find it mentioned that they formed tanks, or built and restored edifices for various religious purposes. Mahāsēn, who reigned from A.D. 275 till 301, entered into negotiations with Gubasēva, King of Dansapura in Kalinga, to procure the surrender of a relic called the Dangistra Dalada, or right canine tooth of Buddha: it arrived in Ceylon, during the reign of Mahāsēn's son (A.D. 308), and has since then on several occasions played a conspicuous part in the history of the island, owing to the importance attached to it by the inhabitants. As early as the year 209 of our æra we find a schism among the Ceylonese Buddhists mentioned: it originated in the doctrines put forth by one Wytooliya, which were adopted by the priests resident at a temple called the Abayagiri vihāra. An inquiry was instituted, and the doctrine having been found incorrect, the books in which it was set forth were destroyed. These strong measures did not however effectually check the progress of the schism; and during a considerable period we find indications of the alternate triumph and oppression of the heretical party. Another heresy, called the Wijrāwādīya, is stated to have been introduced into Ceylon from the continent of India during the first half of the ninth century.

But whilst Buddhism had thus gained ground in Ceylon, and was from thence propagated to the eastern peninsula, it had to endure in India a long-continued persecution, which ultimately had the effect of entirely abolishing it in the country where it had originated. The motive of these persecutions we confess ourselves unable fully to discover. That the caste of the Brahmans could not without jealousy and alarm witness the progress of a sect which threatened

to overthrow their authority, and to deprive them of all those privileges, which a creed and a social constitution, sanctioned by the Vedas, secured to them, is natural to suppose. But it is less intelligible why Indian sovereigns, after so long a period of toleration, should have consented to lend the Brahmans their aid in oppressing a class of their subjects, whose principles, it would appear to us, ought rather to have recommended them as the natural protectors of the royal and civil authority against the ambitious arrogance of an hereditary priesthood; and the perplexity of this question is still increased by the forbearance shown in every part of India to the Jains, a sect so strikingly similar to the Bauddhas, in all those particulars at least which seem to have drawn upon the latter the hatred of the Brahmans.

Mr. Wilson (*Sanskrit Dictionary*, 1st edit., preface, p. xv.—xx.) has shown that the religious wars of the Brahmanical Hindus with the Buddhists commenced in the fifth and continued till the seventh century of our æra. They have evidently contributed to accelerate the diffusion of Buddhism in other countries, though even in India the sect does not seem to have been entirely extinguished for several centuries after the persecutions terminated. Buddhism appears to have been first introduced into China about the year 65 of our æra, by the authority of the emperor Ming Ti. (Du Halde, *Hist. of China, &c.*, vol. iii. p. 34, Eng. trans. 1741, 8vo.) A translation of some of the sacred writings of the Buddhists into Chinese is however stated to have been made in A.D. 418, by a priest from the northern part of India, whose name was Foo-too-pa-to-lo. (Rémusat, *Mélanges Asiat.*, i. p. 116.) According to the Chinese and Japanese list of Bodhisattwas, Pan-jo-to-lo or Banneyadara, the 27th of the series, was the last representative of Buddha, who died in India (A.D. 457); his successor, Bodhidharma, went to China (A.D. 499), and was followed by five Buddhist patriarchs there. From China Buddhism was subsequently extended to Corea, A.D. 628, and to Japan, A.D. 552.

About the middle of the fifth century Buddhism seems to have been carried to Java, whither however Brahmanical settlers had probably preceded it. It is as yet uncertain whether the Buddhism of Java was of Ceylonese or of Indian origin. According to a tradition current in Java, the strangers, who civilized the island, came from Kling (*i. e.* Kalinga, or the northern Circars), a name by which the modern nation of Java seem to designate the whole continent of India.

The early introduction of Buddhism into Cashmir has already been noticed. According to the local history it continued to flourish there till the reign of Nara, B.C. 298, when the Brahmans expelled the followers of Buddha, and burned their temples. (Wilson, *Asiat. Res.*, vol. xv. p. 26 and 81.)

Dr. F. Buchanan (Hamilton) is of opinion that the time of the introduction of Buddhism into Nepal may be fixed about the commencement of the Christian æra, when 'Sâkyas, the last great teacher of the Buddhists, passed through the country, and settled at Lassa, where he is supposed to be still alive in the person whom we call the Grand Lama.' (*Account of Nepal*, p. 10. Compare pp. 32, 56, 190.)

From the Mogol chronicle, published by Schmidt, we learn that Buddhism was for the first time introduced into Tibet during the reign of Hlatotori, in A.D. 407. The great grandson of that king, Srongdsan Gambo, who ascended the throne in A.D. 629, sent Tongmi Ssambhoda, attended by sixteen companions, into India, for the purpose of being instructed in the art of writing. Along with an alphabet, which has till the present day preserved its similarity to the Indian Devanagari character (see the plates accompanying Mr. Hodgson's paper in the 16th vol. of the *Asiatic Researches*), these missionaries seem to have carried the first writings on the religion of Buddha into their native country. But not all the succeeding kings of Tibet were favourable to the new religion. Glang Dharma, who reigned from 902—925, as well as his son Gorel Shakikchi (925—977), were hostile to Buddhism, and persecuted its followers. After a period of persecution which lasted 86 years, the doctrine was re-established in Tibet, in the year 988. Nearly three centuries subsequent to this restoration Buddhism was introduced among the Mongols, during the reign of Godan, a grandson of Gengiskhan, who was converted to the new religion A.D. 1247, by Sâkyas Pandita, a teacher (Bodhisattwa?) who came from the south. (Schmidt's *Ssanang Seetsen*, pp. 25, 29, 48, 113, &c., and the notes of the translator, pp. 325, 329, &c.)

The collection of writings regarded as sacred by the Buddhists is probably as voluminous as that of any sect that ever existed: up to the present time however we know little more about them than their names. The language in which the Bauddha sages originally committed their doctrine to writing we believe to have been the Sanskrit, from which they were subsequently translated into the Pali, and into other languages current in the several countries where Buddhism was introduced. A considerable number of Sanskrit records of Buddhism have been recently procured in Nepal by Mr. B. H. Hodgson; and it is but natural to suppose, that among them some of the antient and original treatises on the doctrines of Buddhism should have been preserved. The most important of these sacred writings is the estimation of the Nepalese Buddhists are nine 'Purânas,' also named the nine 'Dharmas,' narrative works, in which elucidations of the Bauddha doctrines seem to be blended with a legendary account of the life of Buddha and the most eminent sages of the sect. Besides these they possess works called 'Tantras,' which contain prayers and forms of invocations, and are illustrated by ample commentaries, and also collections of prayers, apparently composed for use on certain occasions, which are called 'Dhâranis.' (See Mr. Hodgson's enumeration of the principal existing Bauddha writings of Nepal, in the 16th volume of the *Asiatic Researches*, p. 422, &c.) Quotations in Sanskrit from a collection of 'Sûtras' or short aphorisms, attributed to Buddha himself, occur in Sanskrit works on the Vedânta philosophy: whether these are still extant we do not know.

In the Essay on Buddhism by Kitelegama Dewamitta Unnanse, a native of Ceylon (printed in the Ceylon Almanac for 1835, pp. 211—229), 84,000 sermons preached by Buddha are mentioned (p. 226), which the writer of the Essay says may be contemplated as his personification (p. 229). The Mongol Buddhists possess a sacred work called 'Gandjour,' which is written in the Tibetan language. Timkowski saw a copy of it in a temple at Purga, in the country of the Kalkas Mongols, which consisted of 105 volumes. Chests revolving on an axis, and covered with prayers in large gold letters, are frequently placed in the Buddhist temples among the Mongols, in order that persons who cannot read may come and turn them round as long as their zeal prompts them, which is considered as efficacious as if they recited the prayers themselves.

It is a notion deeply rooted in the mind of all Hindus, often repeated in the Vedas, and variously explained and commented upon by the different schools of Brahmanical philosophy, that the visible world and every thing relating to it is but the transient manifestation of the Deity, without real or permanent existence; that the confinement of the human soul, itself an emanation of the Divine Spirit, in a perishable body, subject to all the changeful accidents of matter, is a state of misery; and that every effort of the soul during life should be directed towards ensuring the emancipation of his soul after death, *i. e.* not only its liberation from the necessity of undergoing another birth, but being again invested with a body, but altogether its return from individual existence, and its direct return to a last union with the Divine Being. This notion, developed in a peculiar manner, forms likewise the basis of the Bauddha creed.

The Buddhists of Nepal, who seem to have preserved the antient doctrines of the sect with the greatest purity, and concerning whose religious notions our information is as yet more explicit than any that we possess of the tenets held by the Buddhists of other countries, are divided into five schools, who differ partly in the manner in which they teach that the Divine Spirit was active in the production of the world, and partly in the method which they prescribe for effecting the liberation of the soul after death. We shall endeavour briefly to state the peculiar doctrines of each of these schools, following chiefly the 'Quotations in Pali' published by Mr. Hodgson in the 'Journal of the Royal Asiatic Society,' vol. ii. p. 295, &c. All concur in admitting the primeval existence of the Deity, who was when nothing else was, and who is thence called Adi-Buddha or the First Buddha.

1. According to the Swâbhâvika school, Swâbhâvika, a sort of plastic faculty, springing from, or rather identical with, Iswara, or God, is the source from which the elements and all things and beings proceed, and into which they are ultimately to be re-absorbed. The universe constantly revolves between Pravritti and Nirvritti, or creation and

discretion or combination; and this eternal change of existence and non-existence is the system and law of nature, without any co-operation of will or design on the part of Isvara. (Hodgson, l. c. p. 297, No. 5.)

2. The Karmika school attributes more of a personal nature to the Deity, and asserts that the creation of the world was the deliberate act of Isvara. Nirvāṇa, i. e. perfect calmness or release, is his proper and enduring state; but for the sake of creating the universe, he became Paśupati, or "embowed with holed consciousness," and produced the five divine Buddhas (Vairocana, Akṣobhya, Ratnasambhava, Amida, and Amoghśiddha), who became the engines of the elements, and by the agency of the five Bodhisattvas, beings produced by them, were the authors of the world. These five Bodhisattvas therefore as delegates of Isvara, produced all things by their fiat. (Hodgson, l. c. p. 307.)

3. The Karmika school which struck with the Yāmika is opposed by Mr. Hodgson to be of more recent origin than the two first; appears to have speculated chiefly on the means best calculated to prevent the release of the soul from its connection with matter; and as it denotes the production of all things into existence from avidyā (error, delusion), so it maintains that the regressive movement towards non-existence must be effected by true knowledge. The "error" here alluded to is the groundless belief in the reality of the external world. This belief, when arising, in the unembodied sentient principle, is attended with a longing after the objects which it supposes to exist; hence individual consciousness springs, and a subtle personal frame forms itself as the seat of that consciousness; a perception of separate objects follows, which produces desire in the subtle frame, and leads to its corporeal expansion and physical form. The progress of the soul towards matter is therefore the effect of a succession of acts (Karma)—whence the name of the school Kārmika on the part of the soul; and its liberation must be sought by relinquishing the erroneous notion of the reality and stability of external objects; for when this great error is abandoned, all its consequences vanish with it, along with all mundane things and existences which are only derived from thence. This school likewise inculcates the doctrine which is very current in India, that the course of a man during former existences determines his destiny in the present life; "Although I had acquired a perfect body, still in this body even death again exposed, because I had still to expiate a small portion of the sins of former births," as said Śākyasīma. (Hodgson, l. c. p. 304.)

4. The Yāmika school has directed its attention to the same problem as the preceding, and proposes to solve it in a similar manner. The cause of the creation of the world, says its philosopher, is Yama, i. e. an effect or a determined will on the part of the Creator. In the same manner in the affairs of this world all difficulties are overcome by Yama; and so the attainment of that wisdom which procures the elevation of the soul from matter depends on (Yama) a necessary intellectual effort. (Hodgson, l. c. p. 305.)

Yama's name is in use to denote the state of final liberation of the soul, which is by all these acts prepared as the object to which man should aspire; but the aspiration, which Buddhi is said to be particularly fond of employing, is Nirvāṇa. This word is properly a passive participle of the Sanskrit root ni, "to know" (as also wish), with the prefixing affix, ni, "away from, precluded to it, and its primary meaning is "known not, extinct," as a soul when it goes out, or, hence "departed, distant;" but the word is likewise used with the preparation we take in a negative sense, and it then signifies "calm, untroubled," as employed as a substantive, "calmness, tranquillity;" whence is derived also use in a description of the happy state of immortals, serenity and spright of which the soul arrives on its return with the Deity Isvara.

The popular belief in Nepal attributes the superintendence of the work of creation especially to Padmapāni, one of the five divine Bodhisattvas above alluded to. He is represented as having produced the three Hindu deities Brahmā, Viṣṇu, and Śiva, and as having assigned to them respectively the task of Creation, Preservation, and Destruction. He is Brahmā therefore also according to this account generated the world. Another common name for Padmapāni is Abhi-Buddha's special command, created all exist-

The cosmography of the Buddhists divides the entire universe into four principal divisions. The first consists of three hundred and eighty-four millions, or mansions, created by Abhi-Buddha, and including the Agastya-lokāsana, his own eternal abode; devout followers of Buddha will proceed to one of these mansions after death. Below them is the second division, which consists of eighteen millions, called Kāyasthāna bhūvanas, and created by Brahmā; further down is the third division, comprising the six Kāmarāśāna bhūvanas, which are subject to Vishnu; and below these are the three Bhūvanas called Avāntasthāna, superintended by Śiva, and forming the fourth division. Pious worshippers of Brahmā, Vishnu, and Śiva will, after death, proceed to these divisions respectively. (Hodgson, *Treatise, Reg. Stat. Soc.* vol. II. p. 230, 231.) Below these Bhūvanas another series of mansions begins, which belong to Indra, Mitra (the sun), Chandra (the moon), Agni, Vayu, &c. These follow the earth, with its seven divisions or continents, separated by seven seas. Below the earth is the "world of waters," in which the earth floats as a boat; and below the "world of waters" are the seven Parādas or infernal regions, six of which are the abode of the Dātyas or malignant spirits, and the seventh, which is divided into eight compartments, is the hell of sinners.

Mr. T. J. Schrodler has translated an extract from a Mongol work, giving an account of the creation (*Souang Souten*, p. 302), according to which nothing or empty space is the original state of every thing that exists. "The motion of the world is in the amount represented as proceeding from the 'region of the second Dhyāna' (or the self-contemplation of the Deity), and is effected by the 'region of the first Dhyāna' for the divine will and agency?); which comprises the shades of Brahmā, Vishnu, and Śiva. A wind arises in this region, which by blowing downwards produces the shade of the superior order of spiritual beings; and in the same manner a succession of shades of spirits gradually inferior is formed, till the winds reach the lowermost limits of empty space, and there produce a condensation of air which becomes the germ of the material world. All these regions or shades, with the exception only of the 'region of the second Dhyāna,' are subject to alternate production and dissolution.

Along with many other portmanteau conceptions the Buddhisms seem to have borrowed from the Brahmans their doctrine of the four yugas or periods of time into which a Kalpa or the duration of one existence of the world is divided. These yugas they distinguish by the gradual decreasing length of man's life in them. In the first yuga of the present Kalpa men lived 80,000 years; in the second 70,000; in the third 60,000; and in the present fourth yuga, which is again subdivided into four periods, the duration of man's life will be successively diminished from 100 to seven years, and towards its termination the stature of men will only be the height of a thumb. (Hodgson, *Treatise, Reg. Stat. Soc.* vol. II. p. 230.)

One of the essential differences of the Buddhists from the Brahmans is the character which they attribute to their prophets or saints, and especially to the founder of their sect. Śākyasīma, according to the common belief of all his followers, was not, like Brahmā or Krishna, an exalted, or incarnation of the Deity, but a mortal man, who by his sanctity and devotion attained the highest eminence, and after his death proceeded at once to the final union with Abhi-Buddha. He had been preceded by six persons similar to him in holiness, whose names were Vipśava, Nikhī, Vipśava, Kūśubhānā, Kāṇḍhānā for Rāṇḍa Mānā, and Kāyapa; but nothing is told us of the deeds of these mythological beings, and they are even remembered vaguely, the first three being sometimes omitted. Another saint of this description is supposed to appear on earth when nine years shall have elapsed after the death of Śākyasīma. The appearance of the latter was followed by a succession of Bodhisattvas, i. e. mortals born perfectly virtuous, whose souls are no longer subject to the necessity of terrestrial existence, but who voluntarily descend to the earth in order to promote the welfare of mankind. These B-Isattvas have gradually assumed the character of reappearances of Śākyasīma himself, in which capacity the line is continued till the present day in the several Lemas of Tibet; for it is admitted that the re-visitance of the age in more than one individual simultaneously involves no contradiction. (DALAI LAMA.)

This figure of 4 contained identity of person in the sub-

cessive Lamas is strikingly illustrated by a passage in a letter addressed in 1774 by the Lama of Teshoo Loomboo to the governor-general in India, in which he applied for the grant of a small piece of ground near Calcutta, stating as a motive for his request, 'that although in the different periods of his reviviscence he had chosen many regions for the places of his birth, yet Bengal was the only country in which he had been born twice, for which reason he had a predilection for it beyond any other.' (Turner's *Embassy to Tibet*, pref. p. xv.)

The Buddhists reject entirely the authority of the Vedas, and the religious observances, sacrifices, and ceremonies which are prescribed in them and kept by the Hindus. They have no distinction of hereditary castes. Their priests are chosen from all classes of men: they are obliged to live in celibacy, but may resign their sacerdotal character, if they desire it, and are then permitted to marry. In Ceylon three orders of priests are distinguished: those of the highest order (who seem to be the only true Bauddha priests in the island) are usually men of high birth and learning, and are supported at the principal temples called vihâras, most of which have been richly endowed with farms, &c. for their maintenance by the former monarchs of the country. A translation of some highly interesting inscriptions, in which grants of this kind and the conditions attached to them, are recorded, has been given by Mr. G. Turnour in the Ceylonese Almanac for 1834, p. 178, &c. All Bauddha priests go bare-headed, and with their heads shaved; but to defend themselves from the sun they carry an umbrella made of the leaf of the palmyra-tree, and Knox mentions that they are permitted in Ceylon to wear this screen 'with the broad end over their heads foremost, which none but the king does.' In Ceylon they wear a yellow coat, gathered together about the waist and coming over the shoulder, and girt about with a belt of fine packthread. In the appendix to Symes's *Embassy to Ava* there is an account of the ceremonies used in the Birman empire at the consecration of a Buddhist priest: the candidate is reminded of four principal commandments, which require him to observe strict chastity, not to commit murder, not to steal, and not to practise sorcery, or to disgrace the priestly character by covetousness; and he must promise that he will procure his maintenance by perambulation and begging; that he will wear a particular kind of dress; that he will dwell in houses of a certain description, and that he will endeavour to turn to some use things thrown aside as useless by others, or to discover the medicinal powers of plants not previously employed. Buddhist priests are not forbidden the use of animal food; but they must not slaughter animals themselves. Convents for priests as well as nunneries exist in all countries where Buddhism has been introduced. Their processions and their forms of religious worship are described as being attended with much pomp and splendour, and well calculated to impose upon the multitude. The first Christian missionaries that proceeded to Tibet were surprised to find there, in the heart of Asia, monasteries, processions, festivals, a pontifical court, and several other ecclesiastical institutions resembling those of the Roman Catholic church; and many were induced by these similarities to consider Lamaism as a sort of degenerated Christianity. It should however be remembered that at the time when Buddhism was introduced into Tibet, Nestorian Christians had ecclesiastical settlements in Tartary; that Italian and French messengers who visited the court of the Khans carried church ornaments and altars with them, and celebrated their worship in the presence of the Tartar princes; and that an Italian archbishop sent by Clement V. established his see at Karakorum, and erected a church in which divine service was performed with all the ceremonies usual in Europe. It is by no means improbable that the Lamas, whose court then began to assume a splendid exterior, should have adopted some of the forms of the Catholic service as they saw it celebrated by these foreigners, and that imitation should thus have co-operated in producing a similar mode in conducting the divine worship in two religions essentially foreign to each other.

Concerning the details of the ecclesiastical establishments of the Buddhists, we must refer our readers to the articles giving an account of the several countries into which Buddhism has been introduced, such as China, Japan, Ceylon, Tibet, &c.

BUDDING, an operation in horticulture, by means of which the branches of one kind are often made to grow

upon the stem of another kind. It is stated in the article *BUD*, that this organ has the power of growing when separated from the mother-plant. Not only will it grow, but it will emit roots, form a stem, and become in time a new individual in all respects similar to its parent, retaining all the special peculiarities of the latter. In this respect it differs from a seed, which in general is not capable of doing more than propagating a species, without any power of preserving, unless accidentally, the peculiarities of the individual from which it sprang.

Gardeners have availed themselves of this property of leaf-buds for the purpose of artificial propagation, either by planting the separated buds in earth, or by introducing them into the branches of other plants. The former is called propagation by eyes [*ΕΥΞ*]; the latter only is technically named budding.

Budding is usually executed thus:—With a very sharp knife a fully formed bud, and the leaf to which it is attached, are pared off the branch, along with about half an inch of bark adhering to them at the upper end, and an inch and a half at the lower end. By holding the leaf firmly between the finger and thumb of the left hand, with the woody side of the paring uppermost, the operator is able to disengage from the bark the small slip of wood which adheres to it, and by a jerk to snap it off the paring, leaving only the cellular centre of the bud adhering to the branch. This done, he makes in the branch to be operated on an incision transversely through its bark, and another longitudinally at right angles to the first and in a direction downwards, so that the two together resemble the figure of the letter *T*. He then, with a flat ivory blade, lifts up the bark on each side of the longitudinal incision, so as to separate it from the wood, and inserts beneath it the prepared bud, which is gently pushed downwards till the bud itself is a little below the transverse line. This done, a high waxen mass is carried round the stem so as to bind the bud to the new wood on which it is placed. If the operation is well performed, the bud will thus be fixed on a new stem in the same position as it occupied on the branch from which it was taken; the mouths of the medullary rays of its stem will unite with those of the wood of the stranger plant, and will be kept in contact with a continual supply of sap oozing out of the alburnum on which it is placed, and will absorb that food, and soon accustom itself to its new position. Then when the growing season arrives it will be stimulated by light and warmth to attract sap from the wood to which it has adhered, it will push forth new roots of its own over that which it touches, and thus will form an intimate union with its stock as it would have formed with its parent plant. In order to enable the latter to decay it is customary to head down budded branches to within a few inches of the buds, so as to compel the sap which oozes out of the roots to expend itself upon the former; a few other buds near the artificial bud are allowed to push upwards to attract the sap to their neighbourhood, and are destroyed; when the stranger bud has pushed to the length of a few inches, it is tied to the stem so as to be secure from being broken off by accident; and finally, when quite secure, that small portion of the stem of the parent which had been left above the bud in the first instance is cut away, and the branches produced by the bud become the head of the new tree.

Such is the general nature of budding, but like all other operations it can only be well performed after much experience. It may be varied within certain limits, but there are in fact a few other modes, such as *scallop-budding* and *scallop-budding*, which are occasionally practised (see Loudon's *Encycl. of Horticulture*, new ed. p. 656); but that here described is the most common and the best. Roses, plums, peaches, nectarines, &c. are many other plants are chiefly propagated thus, and for no theoretical reason why it should not be extended to other species. In practice however it is occasionally practicable, as in heaths, in vines, &c., owing to causes which vary in different instances.

Budding is usually performed in the months of July and August, because at that season the bark separates from the wood, and the young buds are fully formed; whenever the two latter conditions can be satisfied, the operation may take place equally well.

It must however be observed, that the bud of one plant can only be made to grow upon the wood of another when both bud and stock are nearly related to each other.

Thus roses will bud upon roses, but not upon currants, as is vulgarly supposed; apples will bud upon pears or thorns; pears upon medlars or quinces, and apricots upon plums, because all these species are closely related; but an apple will not bud upon a plum or a peach, because, although they are allied to a certain degree, yet their consanguinity is not sufficiently strong.

BUDE', GUILLAUME, or, as he is better known by the Latinized name, *Budæus*, was born in Paris in 1467, of an ancient and honourable family. His early education appears to have been neglected, and when he went to Orleans to study the civil law he profited little, owing to his very imperfect knowledge of Latin. Indolence and a love of amusement consumed much of the remainder of his youth, till he was suddenly inspired with so ardent a love of letters that he even regretted the hours necessarily given to repose and refreshment, and applied to learning with an assiduity which threatened injury to his health. Yet although, to use his own words, he was self-taught and late-taught, he attained an eminence in learning which placed him above most of his contemporaries.

He was well known by name both to Charles VIII. and to Louis XII.; yet notwithstanding he was twice employed by the latter king in Italian embassies, and even inscribed on his list of royal secretaries, he did not appear at court till the reign of Francis I., during the interview with Henry VIII. at Ardres. The king then appointed him his librarian and *maître des requêtes*, and the citizens of Paris named him *provost of the merchants*—offices, which he complained were great interruptions to his pursuit of letters. In 1540, while accompanying the court on a summer visit to the coast of Normandy, in order to avoid the excessive heat, he contracted a fever which rapidly carried him off. He left seven sons and four daughters, with injunctions that his interment should take place by night. This request, and an avowal of Protestantism made at Geneva by his widow and some part of his family, soon after his decease, have thrown doubt on his orthodoxy, and he has been abused by the Romanists accordingly. The rumour derives strength from his intimate correspondence with Erasmus, whom he rivalled in anti-Ciceronianism, and in his hatred of monks and illiterate ecclesiastics. In one of his letters he shows a supreme contempt for the Divines of the Sorbonne, and calls the members of it prating sophists, and with the deviation of a single letter (a license not to be denied to a pun), 'Divines of the Sorbonian (Serbonian) bog.'

His friendship with Erasmus however was not always uninterrupted, for Budæus was fond of disputing on trifles. One of his letters, while he was influenced by some pique, begins, 'Budæus, up to this moment a friend of Erasmus, sends him his last greeting;' to which Erasmus replies with unbroken suavity, 'Erasmus, the perpetual friend of Budæus, whether he will or not, sends him not a last greeting, but one which shall flow freshly for ever.'

One of his particularities was an unwillingness to sit for his portrait. He was less skilled in Latin than in Greek, and his epistolary style in the former language is tinged with harshness, and strongly contrasts with the pure and elegant tone of Erasmus. His works, of which an accurate list is given by Baillet in his '*Jugemens des Scavans*,' were collected at Basil in 1557, in four folio volumes, an edition which has become extremely scarce. All his writings abound in learning; but the tract best known to modern readers is entitled, '*De Assè et Partibus ejus*,' in the preface to which he complains that on his wedding-day he was not allowed more than six hours for study. A second story, which has been attributed to other great scholars also, rests on not quite so good authority. 'An alarm of fire having been one day given while he was at work in his study, he asked the terrified servant with great calmness why she did not inform her mistress? "You know," he added, "I never concern myself about household matters." His Commentaries on the Greek Tongue' are still deservedly held in high repute. They elucidate many terms employed by the orators, the explanation of which is not so easily attainable elsewhere. His Greek letters also are written with much elegance, and show a profound knowledge of the language.

BUDGELL, EUSTACE, son of the Rev. Gilbert Budgell, was born about 1685, at St. Thomas's, near Exeter. Through his mother, Mary Gulston, daughter of a Bishop of Bristol, he was connected with Addison, who used to name him, 'that man who calls himself my cousin,' and who wrote an epilogue to Prior's *Phœdra*, which was attributed to Budgell,

and acquired for him a reputation which he little merited. He was educated at Christchurch, Oxford, and afterwards entered at the Temple; where, devoting himself to literature, he wrote largely in the *Spectator*, to which he contributed all the papers marked X, and on the discontinuance of that work all those in the *Guardian* marked with an asterisk. Through Addison's influence he held many subordinate offices under government in Ireland; and in 1717, when his patron became secretary of state in England, he procured for Budgell the lucrative appointment of accountant and comptroller-general in Ireland. A misunderstanding with the lord-lieutenant, lord Bolton, and some lampoons which Budgell was indiscreet enough to write in consequence, occasioned his resignation.

From that time he appears to have trodden a downward course; he lost 20,000*l.* in the South Sea Bubble, and spent 5000*l.* more in unsuccessful attempts to get into parliament. In order to save himself from ruin, he joined the knot of pamphleteers who scribbled against Sir Robert Walpole; and he was presented with 1000*l.* by the Duchess of Marlborough. Much of the '*Craftsman*' was written by him, and a weekly pamphlet called the '*Bee*,' which commenced in 1733 and extended to 100 numbers. But his necessities reduced him to dishonest methods for procuring support, and he obtained a place in the '*Dunciad*,' not on account of want of wit but of want of principle, by appearing as a legatee in Tindal's will for 2000*l.*, to the exclusion of his next heir and nephew; a bequest which Budgell is thought to have obtained surreptitiously. In 1736, being utterly broken in character and reduced to poverty, he took a boat at Somerset Stairs, and ordering the waterman to row down the river, he threw himself into the stream as they shot London bridge. Having taken the precaution of filling his pockets with stones, he rose no more. On the morning before that on which he drowned himself, he had endeavoured to persuade a natural daughter, at that time not more than eleven years of age, to accompany him. She however refused; and afterwards entered as an actress at Drury Lane Theatre. Concerning her success or subsequent fortunes we possess no information. Budgell left in his secretary a slip of paper, on which was written a broken distich, intended perhaps as an apology for his act—

'What Cato did, and Addison approved,
Cannot be wrong.'

It is unnecessary to point out the fallacy of this defence of his conduct, there being as little resemblance between the cases of Budgell and Cato, as there is reason for considering Addison's Cato written with the view of defending suicide.

BUDISSIN. [BAUTZEN.]

BUDWEIS, the southernmost circle in Bohemia, bounded on the E. and S. by the archduchy of Austria, and at one point in the S.W. by Bavaria. It is the highest land in Bohemia, and extremely mountainous in the S. It occupies an area of about 1617 sq. m., is watered by the Moldau, and its tributaries the Malsch and Luschnitz, and contained, in 1817, 170,670 inh., but at present about 204,500. The forests are extensive, and produce much timber. Cattle, and especially sheep, are fed in great numbers; the soil is fertile, and much grain is raised; and the mountains yield iron, coals, and other minerals. The manufactures consist of glass, woollens, paper, iron ware, cottons, &c. Budweis enjoys the advantage of a canal, called the *Schwartzenberg* canal, which unites the Moldau with the Danube. It contains eight towns, among which are Budweis; Krumau, a mining and manufacturing town, with 4400 inh.; and Wittingau, 2800 inh.; 25 market vill., and 897 other vill. and hamlets.

BUDWEIS, the capital of the circle, is situated close to the confluence of the Moldau and Malsch, and bears, in Slavonian, the name of '*Cesky-Budgieowicz*.' It is a well and regularly built town, includes three suburbs, is the seat of a bishopric instituted in 1783, and has a cathedral, seven churches, one monastery, a gymnasium, a philosophical academy, a diocesan and theological seminary, between 740 and 750 houses, and a pop. of about 7500 souls. The markets for horses and grain are important: the manufactures consist of woollens, saltpetre, &c.; and by means of the Moldau, which connects Budweis with Prague, it is a place of considerable transit for merchandise passing from the archduchy of Austria, Hungary, Styria, and Trieste to the N. of Bohemia and Germany. 48° 59' N. lat., 14° 58' E. long.

BUENOS AYRES. [LA PLATA.]

BUENOS AYRES, the capital of the republic La Plata (Provincias Unidas del Rio de la Plata), in South America, is in 34° 36' 29" S. lat., 58° 10' 11" W. long., on the S. bank of the upper part of the wide estuary of the La Plata river, about 150 m. from the place where it enters the sea. The estuary at Buenos Ayres is about 36 m. wide, so that Colonia, a small place on the opposite bank, is only visible from the more elevated places in the town, and then only in very clear weather. Though the estuary has a considerable depth in the middle, it grows so shallow towards its S. bank that large vessels are obliged to remain in the outer roads from 7 to 9 m. from the shore; small vessels enter the inner roads, called *belizas*, where they are still 2 m. from the town. The beach itself is extremely shallow; even boats cannot approach nearer than 50 yards or a quarter of a mile, according to the state of the tide, and persons as well as goods are landed in rudely constructed carts drawn by oxen. When it blows fresh the surf on the beach is very heavy, and often causes loss of life. A pier which was constructed in the time of the Spanish government is nearly useless, except at very high tides.

The city stands on a high bank for about 2 m. along the river. Between the city and the water's edge is a space of considerable width, rarely covered by the tides, on which some trees are planted. To the E. of the pier, at a distance of a few hundred yards, stands the fort or castle, the walls of which extend to the water's edge, and are mounted with cannon. It is of little importance in a military point of view; at present it has no garrison, and the buildings are appropriated to public offices, and the residence of the president of the republic.

About a mile lower down the high bank suddenly turns inland, leaving a vast level plain along the shore, traversed by a little stream, which makes a good harbour for small craft, its mouth forming a kind of circular basin.

Behind the castle is the piazza or great square, which occupies a considerable space: it is divided into two parts by a long and low edifice, which serves as a kind of bazaar, and has a corridor along the whole length of each side, which is used as a shelter for the market people. The space between this bazaar and the fort is appropriated to the market, where all kinds of provisions, especially excellent fruits, are sold; but there are no stalls, and the goods are spread on the ground. The opposite side, which is much larger, is a kind of *place d'armes*, and contains a very fine edifice, called the *cabildo* or town-house, in which the courts of justice hold their sessions, and the city council or *cabildo* meets. Near the centre of the square is a neat pyramid erected in commemoration of the Revolution, by which the country was freed from the dominion of Spain. It has an emblematic figure at each corner, representing Justice, Science, Liberty, and America: the whole is inclosed with a railing.

The streets are at regular intervals, and are open at right angles to the river, with a rather steep ascent from the shore. They are straight and regular; a few of them near the piazza are paved, but the greater part are unpaved. In the rainy season they are a slough of mud, and in the dry season the dust in them is still more insupportable. Most of them have footpaths, but they are narrow and inconvenient.

In the neighbourhood of the piazza there are many houses of two stories, but towards the outskirts the houses have only one story. They are built of brick, have flat roofs, and are white-washed. Towards the street they have commonly two windows, which have seldom glass sashes, and are generally protected by a *reja* or iron railing, which gives the houses the appearance of a prison. In the middle of this outer wall is a gateway, the rooms on each side of which are generally occupied as places of business, or as merchants' counting-rooms. By the gateway the *patio* or courtyard is entered, which is surrounded on three sides by buildings, the wall of the adjoining house making up the fourth. The building at the back of the court is usually the dining-room; that on the left or the right is the sitting-room or parlour. The *patio* is usually paved with brick, and sometimes with black and white marble, tessellated. In

the better sort of houses a canvass awning is spread from the flat roof over the patio, and serves as a protection against the excessive heat of the sun. Grape vines are planted round the walls. The houses have as little wood as possible about them, both the first and second floors having brick pavements. There are no chimneys except in the kitchens, as the climate is not severe enough to render fire-places necessary in the rooms.

There are fifteen churches, of which the principal are the cathedral, which of itself covers almost a whole square. San Domingo, San Merced, San Francisco, and the *Recoleta*; they are all large and handsome buildings, but of a somewhat gloomy aspect. In the time of the Spanish these churches were ornamented with a profusion of gold and silver, but the revolutionary wars have drained many of their wealth.

The majority of the inhabitants are the descendants of Spaniards, who have settled in that country during the last three centuries. The number of free negroes or slaves is small; that of native Indians is much greater: they compose the greater part of the lower classes, and speak Spanish, having entirely forgotten the language of their ancestors. The whole pop. of the town is estimated by some at only 40,000, but by others at 60,000 and upwards.

No other town of South America has so many institutions for the promotion of science. The university, which has lately been modelled on more comprehensive principles, possesses a library of about 20,000 volumes. There is also a collection of objects of natural history, an observatory, a separate school of mathematics, a public school, and a school for painting and drawing. Since the Revolution there have also been established a literary society for the promotion of natural philosophy and the mathematics, an academy of medicine, and another of jurisprudence, a normal school for mutual instruction, a patriotic union for the promotion of agriculture, besides some charitable societies. A considerable number of newspapers is published in the town. [For the commerce of Buenos Ayres see LA PLATA.]

The town was founded by the Spaniards in 1535, but in 1539 being obliged by the neighbouring Indians to abandon it, they retired to Assumption, on the Paraguay. When the Spaniards were firmly settled in the country they re-peopled the town in 1590, and since that time it always has been increasing, though slowly. The climate is healthy, as the name Buenos Ayres (good air) implies, an appellation which was bestowed on it by its founder Mendoza.

(*The Travels of Braakenbridge, Miers, and Harcourt in the Historical, Political, and Statistical Account of the United Provinces of La Plata.*)

BUFFALO. [Ox.]

BUFFALO, the chief town of Erie county, State of New York, situated near the right bank of the Niagara river, in which the waters of Erie are discharged into Ontario. 42° 54' N. lat. and 78° 55' W. long., and 296 m. W. of Albany.

Buffalo stands on ground somewhat elevated, and is surrounded on three sides by a fine alluvial plain. Its growth has been very rapid. The pop., in 1810, was only 1,000; it had increased, in 1820, to 2095; in 1825 it contained 5,000, and in 1830, the latest enumeration, 8,653 inh. This increase may be attributed to the circumstance of the canal from Albany, on the Hudson riv., to Lake Erie, having its termination at this spot. This canal, which was commenced in 1817, and finished in 1825, is 363 m. long, with a surface width of 40 ft.: it has 84 locks. The cost of its construction was 9,027,456 dollars, and its utility may be estimated from the fact, that, in 1831, the amount of tolls collected exceeded a million of dollars.

The number of travellers passing through Buffalo at all times very great; it forms the port whence persons resort to the northern part of the western states first embark for the lakes. Buffalo was attacked by the British in 1781, and so entirely destroyed by fire, that only one house escaped. The town was soon restored, and buildings of every kind is now (1836) rapidly increasing. Provisions are so cheap that the charge made to boarders, at the first inn in the place, is only 2½ dollars per week.

END OF VOLUME THE FIFTH.

